VERTICAL MARKET ANALYSIS

BANKING AND FINANCE

1993-1998

U.S. Information Services
Market Analysis Program

Report Quality Evaluation

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October, 1993

Dear Colleague:

Attached is the Information Services Market Analysis Program's latest report on the *Banking and Finance Sector.* It provides a current assessment of the events and issues driving this marketplace, and offers INPUT's forecast of the market size for information services for the period 1993-1998.

This report should be filed with INPUT's other *U.S. Information Services Market Analysis Program* reports, behind the tab marked *Banking and Finance.* Your INPUT program binders, together with the delivery mode reports, provide a total assessment of the United States market for information services.

Market Analysis Program industry and cross-industry sector reports are prepared annually, and may be in one of two forms. The expanded report, such as this *Banking and Finance Sector Report*, contain a detailed industry analysis and supporting forecast data. It will typically be 40-50 pages in length. The forecast update will be a short report, providing a new forecast and summary data to support forecast assumptions. It will generally be 15-20 pages in length. Normally, for each industry and cross-industry market segment, full reports will be produced every other year, with summary reports prepared in the intervening years. The intent of this new format is to recognize the value of our clients' time, and provide concise statements of industry activity, supported by rigorous business, technical and competitive analysis, and a five-year industry forecast.

I am certain that you will find the *Banking and Finance Sector* report to be both informative and useful, and welcome any comments that you have on this document, or any of INPUT's publications.

Sincerely,

Bob

Robert L. Goodwin
Manager, Information Services Market Analysis Program

Enc.

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Banking and Finance

Industry Sector Markets, 1993-1998

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Introduction

A
Purpose and Methodology

1. Purpose

There are five basic objectives of this MAP vertical market report:

1. *Industry Introduction* - Introduce the reader to the structure and demographics of the banking and finance market sector.

2. *Business Issues and Trends* - Identify the business issues and trends that are driving the use of information services within the banking and finance sector.

3. *Systems Uses and Issues* - Discuss how the banking and finance sector uses information systems, and the issues facing banking and finance information systems organizations.

4. *Information Services Market* - Discuss the information services market within the banking and finance sector, including market sizing and factors driving market demand for each delivery mode.

5. *Competitive Environment and Vendors* - Discuss the competitive environment and profile a selection of leading information services vendors in the banking and finance market sector.

2. Methodology

Ongoing Research—Much of the data on which this report is based were gathered during 1992 and early 1993 as part of INPUT's ongoing market analysis program. Trends, market sizes, and growth rates are based upon INPUT research and in-depth interviews with users within the banking and finance sector and the IS vendors serving this market. INPUT maintains ongoing relationships with, and a data base of, all users and vendors that it interviews. Interviewees for the research portion of this report were selected from this data base of contacts.

Resources—Extensive use was made of INPUT's corporate library located in Mountain View, California. The resources in this library include on-line periodical data bases, subscriptions to a broad range of computer and general business periodicals, continually updated files on over 3,000 information services vendors, and the most up-to-date U.S. Department of Commerce publications on industry statistics.

Forecast Estimates—Vendors, when responding to interviews or questionnaires, may be unwilling to provide detailed revenue breakouts by delivery mode or industry. Also, vendors often use different categories of industries and industry segments, or view their services as falling into different delivery modes from those used by INPUT. Thus, INPUT must estimate revenues for these categories on a best-effort basis. For this reason, the delivery mode and individual segment forecasts should be viewed as indicators of general patterns and trends rather than specific, detailed estimates for individual years.

When information is provided by vendors as requested, it is often offered under an agreement of confidentiality. Therefore, vendor rankings based on revenue figures should be viewed as approximations.

B
Industry Structure

For purposes of this report, the U.S. banking and finance sector will be segmented as shown in Exhibit I-1.

As this exhibit shows, the banking and finance sector consists of much more than just banks, brokers and S&Ls. The disaggregation of the financial services business—and the associated rise of specialized financial institutions—is an important trend that is strongly related to the development of information technology. The breadth and diversity of this sector are important factors which should not be overlooked by the information services vendor.

EXHIBIT I-1

Banking and Finance

Industry Segments and SIC Codes

SIC Group	Industry Segment
60	Depository Institutions
601	Central Reserve Depository Institutions
602	Commercial Banks
603	Savings Institutions
606	Credit Unions
608	Foreign and International Trade Finance Banks
609	Supporting Institutions
61	Nondepository Credit Institutions
611	Federal and Federally-Sponsored Credit Agencies
614	Personal Credit Institutions
615	Business Credit Institutions
616	Mortgage Bankers and Brokers
62	Security and Commodity Brokers, Dealers, Exchanges and Services
621	Security Brokers, Dealers and Flotation Companies
622	Commodity Contracts Brokers and Dealers
623	Security and Commodity Exchanges
628	Allied Services
67	Holding and Other Investment Offices
671	Bank and Other Holding Company Offices
672	Investment Offices
673	Trusts
679	Miscellaneous Investing

The U.S. banking and finance sector, outlined demographically in Exhibit I-2, is highly concentrated. For example, although there were about 12,300 commercial banks at the end of 1990, approximately 70% of all commercial banking assets were controlled by the top 3% (375 banks) with assets over $1 billion. Savings institutions show a similar concentration, with two-thirds of the assets controlled by the top 9% (259 institutions).

EXHIBIT I-2

U.S. Banking and Finance Industry Demographics

SIC Code	Kind of Business	Establishments (1,000)	Employees (1,000)	Payroll ($ Billions)
	Finance	529.3	6,801.6	184.5
60	Depository Institutions*	80.1	2,029.9	46.2
601	Central Reserve Depository	0.1	26.0	0.7
602	Commercial Banks	51.3	1,463.4	33.6
603	Savings Institutions	22.0	434.7	9.0
606	Credit Unions	3.7	47.7	0.9
609	Functions Closely Related to Banking	2.3	40.0	1.2
61	Nondepository Institutions*	41.8	484.9	13.1
611	Federal and Federally-Sponsored Credit	0.6	17.8	0.5
614	Personal Credit Institutions	25.3	217.8	5.0
615	Business Credit Institutions	3.7	85.1	2.8
616	Mortgage Bankers and Brokers	10.7	149.6	4.5
62	Security and Commodity Brokers	21.5	406.1	25.3
621	Security Brokers and Dealers	13.3	312.6	20.3
622	Commodity Contracts Brokers, Dealers	1.1	15.6	0.7
623	Security and Commodity Exchanges	0.1	7.5	0.3
628	Security and Commodity Services	6.2	67.8	3.8
67	Holding and Other Investment Offices*	21.2	254.0	9.2
671	Holding Offices	5.8	124.5	5.2
673	Trusts	7.6	63.7	1.4
679	Miscellaneous Investing	4.8	41.4	1.5
	Administrative and Auxiliary	2.4	215.8	6.5

* Includes industries not shown separately.

This concentration at the top of the industry is an ongoing trend. According to a recent survey by *American Banker*, the top 300 banks held just

over 60% of bank deposits in 1984. By the end of 1991, this ratio had increased to over 64%. In 1991 alone, when total deposits in all deposit-taking institutions declined by $53 billion, the top 300 banks *added* $30 billion to their deposit base—largely through mergers and acquisitions.

Although many bank observers believe that there will be a number of $300 billion to $400 billion giants by the end of the 1990s, INPUT believes there will still be a large number of small, thriving institutions co-existing with the giants. This issue is discussed at some length in the following chapter.

C
Organization and Contents of Report

The remainder of this report is organized as follows:

- Chapter II—*Trends, Events and Issues*—provides background information on the business issues and trends that are driving the use of information services within the banking and finance sector.

  The section on trends and events focuses on two areas:

  - The impacts of general business trends, such as globalization of markets, competitive changes, organization restructuring, and the continuing use of technology to change basic operational practices and to achieve competitive advantage

  - Banking and finance industry-specific trends and events, including profitability issues, restrictions on the banking business, competition, overcapacity and mergers, and other topics

The section on issues identifies specific topics that should be addressed in developing a business strategy to provide information services to one or more segments of the banking and finance industry.

- Chapter III—*Information Systems*—provides an overview of the basic business processes in the banking and finance industry and their supporting information systems applications. For example, a discussion of how the banking and finance industry uses information systems to operate and manage its business activities is included. Networks and data communications are also included in this analysis.

The impact of new and emerging technologies on applications and IS organizations is addressed, as are organizational and budgetary considerations.

- Chapter IV—*Information Services Market*—looks at the banking and finance sector from two viewpoints:

  - By delivery mode: How are these services delivered? INPUT identifies user information services expenditures for the following delivery modes in the banking and finance sector:

    Processing services
    Turnkey systems
    Applications software products
    Systems operations
    Systems integration
    Professional services
    Network services

  - By industry segment: Who is buying information services? In other words, what segments within the banking and finance sector are buying information services?

Overall market forecasts are provided by delivery mode and industry segment.

- Chapter V—*Competitive Environment*—identifies leading IS vendors in the industry, discusses some of the factors that affect the competitive dynamics of the industry, and profiles representative vendors.

- Chapter VI—*Conclusions and Recommendations*—reviews the trends and opportunities described in the report and provides recommendations for vendors as well as users.

In addition, there are two appendixes:

- Appendix A presents industry-specific definitions.

- Appendix B presents the Forecast Data Base and Reconciliation.

The Forecast Data Base contains a yearly (1993-1998) forecast of user expenditures by delivery mode for the banking and finance sector. The Forecast Reconciliation compares this report's forecast with the forecast provided in INPUT's previous banking and finance market report and explains the reasons for any major differences.

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II

Trends, Events and Issues

This chapter discusses trends, events and issues in the banking and finance industry.

Section A highlights the economic, business and political forces as well as key technology trends driving the banking and finance industry, and shows how the industry is responding to these forces.

Section B raises specific issues that should be addressed by IS vendors in developing a business strategy that is responsive to the industry trends discussed in Section A.

A
General Business Trends and Events

The guarded optimism of 1991 and 1992 appears to have been fully justified. Despite several years of predictions that the economy would soon return to steady growth, by mid-1993 some economic growth is apparent, but a clear and definitive turnaround has not yet occurred.

After a heated election campaign in which independent Ross Perot and Democrat Bill Clinton convinced the majority of Americans that change was overdue, the Democratic party seemed to have a clear mandate to overhaul the economy. For the first time ever, the deficit became an important issue in the minds of average voters. In addition, the end of the Cold War seemed to promise potential for major reductions in the military budget, freeing funds for other initiatives such as universal health care.

As of July 1993, however, the public's confidence in the new President is at an historic low. The budget process is stalling; people are realizing that defense cuts mean job losses as well; and the grand health care initiative is a hostage of the deficit. Most observers believe that the economy will eventually find its way back to healthy growth, but the direction and timing of that growth is unclear.

Unfortunately for the banking and finance sector, many of the base closings and defense cutbacks are happening in the same areas that have suffered through the recent S&L/real estate debacles, computer industry layoffs, and state and municipal budget deficits. How much this will affect the recovery in California, Texas, Massachusetts, and other such states is as yet unknown. The three noted states have seen the merger of major banks (some of which were "hemorrhaging") during the last several years; and similar situations may still occur.

Overall, there are still major questions about when the turnaround will occur, how quickly the economy will rebound, and what the new growth rates will be for the country, the various industries and the financial resources that fuel the economy. Most analysts do agree on one thing, however: the American worker's faith in the economy, as demonstrated by willingness to spend and invest, and motivation to compete in the world and domestic markets, will have a major role in igniting and fueling the recovery when it does occur.

Recovered or not, however, the U.S. economy is still active and is *the* major factor in world commerce. Because of this, a number of national and international business trends continue to impact the banking and finance sector in general, as summarized in Exhibit II-1.

EXHIBIT II-1

Business Trends Affecting the Banking and Finance Sector

- 1990-1993 recession in the U.S.
- 1989-1993 "rolling recession" in real estate
- 1980s takeover/LBO-based junk bond debt
- Third World debt
- Global financial services competition
- Europe 1992
- The "virtual corporation"

1. 1990-1993 Recession in the U.S.

Official or unofficial, recession in the U.S. finally ended a decade of largely uninterrupted economic growth. As noted below, junk bond debt was one of the first casualties of the 1990-1991 slowdown. The slowdown also raised the rate of business bankruptcies and imperiled banks' portfolios of loans outstanding. Despite this, financial services companies

recorded a modest recovery in 1991, followed by their best year ever in 1992. An environment of low interest rates, engineered by the Federal Reserve, benefited spread-sensitive institutions such as thrifts and banks, while the stock markets achieved record highs, benefiting brokerage firms, investors and the equity and bond markets. In 1992, interest rates maintained their decline to multiyear lows, continuing the trend noted from 1980 to 1990. Security indexes, on the other hand, have been almost ballistic in their growth, with the Dow exceeding 3500 in the first half of 1993.

2. "Rolling Recession" in Real Estate

Starting in 1989, well before a generalized recession was widely acknowledged, U.S. banks and S&Ls saw a clear and negative regional pattern: a rolling recession in real estate values, starting in the Southwest oil-patch and the Northeast industrial sectors, and moving into the Southeast, the mid-Atlantic states, and finally even the California real estate market.

Banks and S&Ls (as opposed to the nonbank financial sector), are generally restricted by law to a single state or to a largely regional economic base. The exceptions are those large banks and S&Ls that have been allowed by regulators to purchase failing out-of-state institutions that would otherwise have to be closed. As a result of this geographic concentration, each regional roll-down of real estate values weakened both the income and capital base of the region's banks and S&Ls, reducing their ability to either fund new development or acquire old properties.

Even with the low interest rates engineered by the Federal Reserve and drastic price reductions on distressed properties, both buyers and financing have been scarce. The FHA limit of $150,000 on qualifying loans has eliminated this source of financing for many homes in previously overheated (and still overpriced) markets such as California. And while some homeowners have taken advantage of the low interest rates to refinance homes they purchased in the higher rate environment of the 1980s, many others have found themselves unable to refinance because their equity has actually decreased with the overall decline in real estate values.

As noted above, this problem will likely continue for some time in specific regions of the country. California alone will suffer over 30% of the total nationwide financial and employment loss from the recently proposed military base closings, causing major disruptions in the housing market in areas such as the San Francisco Bay Area.

3. Junk Bond Debt

The 1980s' excesses in the issuance of junk bond debt to finance corporate takeovers and leveraged buyouts became accountable in the early 1990s, especially as the economic slowdown reduced the ability to service the

debt. The result was bankruptcy in some cases and substantial restructuring of the debt in others. Either case impacted banks, savings and loans, and brokerages with substantial junk bond holdings.

In some instances, the debt was swapped for equity in the firms, increasing the debt holders' asset base but cutting their anticipated high rates of (junk bond) interest return. This, of course, put additional pressure on financial institutions at a time when regulators were looking for them to *shrink* their asset base as one means of improving capital adequacy. More typically, banks have tried to sell these loans—albeit at a loss—to clear their books and reduce their managerial headaches.

One bright spot of the junk bond debacle is that some brokerage firms have realized additional fees from taking public some of the successful LBOs they engineered in the 1980s. Although the majority of junk bond problems now appear to be behind us, the problems created by the Clinton administration's economic restructuring will plague some of the highly-leveraged operations born in the 1980s, and some additional failures are certain over the next several years.

4. Third World Debt

The problems of Third World debt, once a central concern of regulators and bankers, now appear largely behind us. Banks have taken massive reserves against these obligations every year since 1987. In addition, the financial restructuring of these loans, under a string of accords called the Brady Plan, has stabilized the financial situation of both the banks and the debtor countries.

Under the Brady Plan, debtor countries agreed to undertake significant economic reforms that would improve the outlook for private business and investment. At the same time, financial institutions were encouraged to restructure loans, lengthening repayment periods, reducing principal and/or interest, and converting some loans to bonds and/or equity. In some cases, foreign government guarantees were added to the restructured financing. The combination of this aggressive restructuring and the reserves accumulated since 1987 have produced a situation in which banks are probably "over-reserved" for these loans and will likely see net recoveries in the future. Exhibit II-2 shows the LDC exposure at money center banks as of the end of 1991.

EXHIBIT II-2

Banking and Finance

LDC Exposure at Money Center Banks

Center	1990	1991	Percent Charge	Adjusted* Reserves As a Percent of Adjusted LDC Loans	LDC Loans As Percent of Total Loans
Citicorp	7.6	3.6	(53)	54	2.4
Chase Manhattan	4.0	3.3	(18)	56	4.9
BankAmerica	3.0	1.1	(63)	74	1.3
Bankers Trust	2.1	0.6	(71)	73	3.5
Chemical Bank	5.5	3.9	(29)	59	4.6
J.P. Morgan	2.4	1.1	(54)	80	3.9
Total	24.6	13.6	(45)	—	—

*Net charge-offs added back to both loans and reserves.

Source: Company reports.

As a result of the Brady Plan reforms, private investment in Latin America has increased dramatically since 1989. Major privatization of government-owned firms and industries has been undertaken in most Latin countries, creating a significant demand for new capital. The capital flight of the late 1980s has been replaced by a renewed demand for LDC debt, and money is now flowing back into these countries. With restructured investments guaranteed, future investments being made in a more pro-capital environment, and massive tax loss carryforwards from previous writeoffs, most banks are now in a good position compared to what had been a crisis mode for the last ten years.

5. Global Competition

The increasingly global level of competition facing many U.S. industries is a key business trend for the banking and finance industry as well. Although the largest U.S. money center banks for years have provided a variety of banking services overseas, during the 1980s the reverse became true.

One reason was an expansion of the trend that began with the oil shocks of the 1970s—when Middle East nations enjoying a trade surplus with the U.S. invested their petrodollars in U.S. property, corporate debt, and

government securities. During the 1980s, countries with hard-goods trading surpluses with the U.S.—Japan in particular—made parallel investments. These capital exports helped finance ballooning U.S. federal government deficits and the overseas trade deficit. To manage these investments, many foreign banks opened offices or branches in the United States. Japanese banks for the first time became aggressive acquirers of U.S. banks.

As nations become large net exporters of capital, their banks tend to follow their investments overseas. Citicorp was the model for U.S. bank expansion into foreign markets, starting in 1892 and opening branches in 12 foreign countries before the turn of the century. Following the second world war, many other U.S. banks moved into foreign markets, and the 1960s and 1970s saw rapid growth in this arena, fueled by massive exports of capital from the U.S. Now that the U.S. has become a net importer of capital, however, and most U.S. banks have cut back their overseas activity, many regional banks have exited the business entirely.

Exhibit II-3 lists the top 25 banking companies worldwide (ranked by value of assets) at year-end 1991. Only one of these—Citicorp—is a U.S. bank. In addition to their retreat from foreign markets, U.S. banks face a different regulatory climate in their home markets than most foreign competitors face in theirs. The restriction on multistate branching imposes a significant limit on the growth of U.S. money center banks—a limit that Japanese, French and other foreign banks do not have to face. And while there have been worldwide agreements (under the sponsorship of the Bank for International Settlements) on improving bank capital adequacy, Japanese banks tend to be more highly leveraged than their U.S. counterparts, and have much more freedom to make equity investments in their industrial partners.

EXHIBIT II-3

Banking and Finance

Top 25 Banking Companies Worldwide

Company	Location	Assets ($ Billions) 1990	1991
1. Dai-ichi Kangyo	Tokyo	428.17	446.21
2. Sumitomo Bank	Osaka	409.16	427.59
3. Sakura Bank	Tokyo	408.75	420.82
4. Fuji Bank	Tokyo	399.55	419.43
5. Sanwa Bank	Osaka	402.70	412.17
6. Mitsubishi Bank	Tokyo	391.53	391.56
7. Norinchukin Bank	Tokyo	249.67	307.28
8. Credit Agricole Mutuel	Paris	305.21	307.12
9. Credit Lyonnais	Paris	287.33	306.26
10. Industrial Bank of Japan	Tokyo	290.07	302.76
11. Deutsche Bank	Frankfurt	266.29	295.62
12. Banque Nationale de Paris	Paris	291.87	278.81
13. Barclays Plc	London	258.98	258.12
14. Tokai Bank	Nagoya	249.75	252.50
15. Mitsubishi Trust & Banking Corp.	Tokyo	237.70	247.54
16. ABN Amro Holding N.V.	Amsterdam	231.42	242.83
17. Sumitomo Trust & Banking Co.	Osaka	218.92	235.38
18. National Westminster Bank	London	232.51	229.08
19. Mitsui Trust & Banking Co.	Tokyo	210.94	226.10
20. Societe Generale	Paris	219.98	223.76
21. Long-Term Credit Bank of Japan	Tokyo	200.68	221.29
22. Bank of Tokyo	Tokyo	223.19	218.78
23. Citicorp	New York	217.00	216.90
24. Kyowa Saitama Bank	Tokyo	217.18	212.62
25. Compagnie Financiere de Paribes	Paris	185.60	199.76

Source: American Banker

Although some critics express concern at the relative size of U.S. and foreign banks, this situation is not so much an indicator of a weakness in the U.S. banking system as it is the logical outgrowth of stronger European, Far East and Near East economies, various trade imbalances and, in some cases, the flourishing of foreign banks under strong government support.

6. Europe 1992

The march toward European trade unification is still going on. Despite the target date of 1992 for rationalization of economic and trade policies, there is still much left undone. The issue of monetary union is still unresolved, with some countries unwilling to give up this key element of their sovereignty. The newly unified Germany is wracked with political and economic problems, and protection of domestic agriculture is still a strong issue in France.

In general, it appears that the planned union will take much longer than anticipated. In addition, the previous concerns about restrictions on the ability of U.S.-based financial firms to compete in Europe and the possibility of stronger European firms' pushing into the U.S. market appear to be unfounded at present. In any case, with the voluntary retreat of U.S. financial institutions from foreign markets, the issue of market restrictions is moot.

7. Outsourcing and the "Virtual Corporation"

The concept of the "virtual corporation," popularized by Professor Michael Porter of the Harvard Business School, represents a new paradigm for organizing and managing a business. Essentially, the virtual corporation is a combination of resources controlled by the corporation, and resources provided through outsourcing and/or strategic alliances. Rather than being a static entity defined by the resources it controls and the products/services it delivers, the virtual corporation is a fluid entity, marshaling the resources it needs from a variety of sources to attack targets of opportunity in a rapidly changing marketplace. The key objective of the virtual corporation is to retain control of the customer or market, serving as a coordinator of the resources necessary to achieve this goal.

This model, though not new, is increasingly relevant to financial institutions, their customers and their information services vendors. Early examples of this model have existed for years in the heavy construction industry, where alliances such as RMK/BRJ undertook major projects during the Vietnam War. More recently, we have seen such previously unthinkable alliances as IBM, Apple Computer and Motorola jointly developing the PowerPC chip, and IBM joining Apple to develop the Taligent operating system.

A recent study by Ernst & Young in conjunction with *American Banker* applied this concept to the banking industry. Looking at the costs of providing the increasingly diverse set of products demanded by an increasingly complex market, and the variety of options that banks have to outsource parts of their operations, the E&Y/*American Banker* team concluded that the virtual bank is the organizational model for the future.

Although not using these words, the banking industry has been making extensive use of this concept during the last decade. During that time, the concept of outsourcing has changed in two important ways:

- The vendor/client relationship has evolved from a somewhat impersonal, hard-nosed commodity-oriented purchase/sale arrangement to much more of a strategic alliance between vendor and client. Vendors are increasingly oriented toward establishing a relationship in which they agree to support the evolving and diverse needs of clients, rather than simply providing a fixed package of services.

- The range of services provided by vendors has expanded, and there are now three distinct types of outsourcing/alliance relationships employed by banks:

  - *Functional* outsourcing - the traditional model in which a specific business activity such as running a data center or processing checks is performed by the vendor.

  - *Line-of-business* outsourcing - a vendor assumes responsibility for processing an entire product line on behalf of the client (credit cards, mortgage loans, trust, etc.), while leaving account relationships in the client's hands.

  - *Business alliance* outsourcing - an allied firm provides all of the services, including marketing and staffing, in exchange for a fee.

Functional and line-of-business outsourcing have been commonly used as cost-saving approaches by smaller institutions. However, the shift toward business alliance outsourcing allows small institutions to compete with much larger firms in providing new services such as securities brokerage and financial counseling. This helps the smaller institution maintain account control, and provides it with fee-based income that would otherwise go to larger competitors. Coupled with increased flexibility in the two traditional forms of outsourcing, the emergence of business alliance outsourcing will help "level the playing field" between large and small institutions, and allow the smaller firms to remain viable competitors in an environment of consolidation by the largest regional and money center banks.

B

Banking and Finance Industry Trends, Events and Issues

The mix of trends and events affecting the U.S. banking and finance industry in the late 1980s and early 1990s can be addressed in terms of the 11 major topics shown in Exhibit II-4.

EXHIBIT II-4

Key Topics Impacting the Banking and Finance Industry

- Banking industry demographics
- Bank profitability
- The S&L bailout
- Business restrictions and competition
- Overcapacity and mergers
- Outlook for regulatory reform
- The shifting credit card business
- Securitization
- Boundaries of the brokerage industry
- Nonbank financial services firms

1. Banking Industry Demographics

a. Banks and Branches

The period since the mid-1950s has been one of mixed growth for insured commercial banks. Although there has been a slight decrease in the total number of banks, the number of branches increased nearly ten-fold between 1955 and 1991.

The number of banks actually increased somewhat during the 1955 to 1984 timeframe, after which it began the current phase of consolidation. Exhibit II-5 shows the yearly changes in number of banks and branches from 1984 through 1991. One thing is immediately apparent from this exhibit. While the number of banks decreased by nearly 18%, the number of branches increased by more than 25% at the same time. As a result, there was a net increase of 14% in total banking offices (headquarters and branches).

EXHIBIT II-5

Banking and Finance

Number of Insured Commercial Bank Offices at Year End: 1984-1991 (Continental U.S. Territories and Possessions)

Year	Main Headquarters Offices	Branch Offices	Total Offices	Percent by Category	
				Main Headquarters	Branch
1991	11,926	52,484	64,410	18.5	81.5
1990	12,345	50,815	63,160	19.5	80.5
1989	12,713	48,084	60,797	20.9	79.1
1988	13,137	46,619	59,756	22.0	78.0
1987	13,722	45,701	59,423	23.1	76.9
1986	14,209	44,356	58,565	24.3	75.7
1985	14,417	43,347	57,764	25.0	75.0
1984	14,496	41,907	56,403	25.7	74.3

Source: Federal Deposit Insurance Corporation, Division of Research and Statistics, "Historical Statistics on Banking: 1934-1991"

Exhibit II-6 provides a detailed breakdown of the changes in the number of banks for each of the years 1984 through 1991. Except during 1985 and 1986, voluntary restructuring has accounted for more of the changes than bank failures. Although bank failures have received a great deal of publicity, far more new banks started than old banks failed during this eight-year period.

EXHIBIT II-6

Banking and Finance

Changes in Number of Insured Commercial Banks: 1984-1991 (Continental U.S. Territories and Possessions)

Year	New Charter	Charter Convert	Mergers	Other	Net Change	Mergers	Payoffs	Net Change	Total No. of Banks	Vol. Restruc.	Failure	Total
1991	92	50	(448)	(8)	(314)	(101)	(4)	(105)	11,926	-2.6	-0.9	-3.5
1990	165	26	(392)	(8)	(209)	(151)	(8)	(159)	12,345	-1.7	-1.3	-3.0
1989	192	8	(411)	(7)	(218)	(197)	(9)	(206)	12,713	-1.7	-1.6	-3.3
1988	229	4	(597)	(13)	(377)	(202)	(6)	(208)	13,137	-2.9	-1.6	-4.5
1987	219	37	(545)	(15)	(304)	(172)	(11)	(183)	13,722	-2.2	-1.3	-3.5
1986	257	56	(339)	(41)	(67)	(120)	(21)	(141)	14,209	-0.5	-1.0	-1.5
1985	330	47	(330)	(8)	39	(96)	(22)	(118)	14,417	0.3	-0.8	-0.5
1984	391	49	(329)	(6)	105	(62)	(16)	(78)	14,496	0.7	-0.5	0.2

Source: Federal Deposit Insurance Corporation, Division of Research and Statistics, "Historical Statistics on Banking: 1934-1991"

b. Employment Patterns

Over this same time period, there has been a small net decline in the total employment at banks. This is due primarily to the reduction in the number of individual banks, and the loss of employment associated with bank failures. Exhibit II-7 traces these changes for the same 1984-1991 timeframe.

EXHIBIT II-7

Banking and Finance

Number of Insured Commercial Bank Offices and Total Employment at Year End: 1984-1991 (Continental U.S., Territories and Possessions)

Year	Main Headquarter Offices	Branch Offices	Total Offices	Total Employment	Change from Previous Year	Employees Per Office
1991	11,926	52,484	64,410	1,486,210	-2.06	23.1
1990	12,345	50,815	63,160	1,517,422	-0.90	24.0
1989	12,713	48,084	60,797	1,531,160	0.27	25.2
1988	13,137	46,619	59,756	1,526,984	-1.19	25.6
1987	13,722	45,701	59,423	1,545,364	-1.12	26.0
1986	14,209	44,356	58,565	1,562,847	0.03	26.7
1985	14,417	43,347	57,764	1,562,317	2.33	27.0
1984	14,496	41,907	56,403	1,526,735	1.16	27.1

Source: Federal Deposit Insurance Corporation, Division of Research and Statistics, "Historical Statistics on Banking: 1934-1991"

Using the data from Exhibits II-6 and II-7 in a regression analysis, the following approximate results are obtained:

Number of Employees per Bank (HQ Office):	69
Number of Employees per Branch	12
Number of Branches per failed Bank	20

Taken together, these parameters account for 92.5% of the variance in bank employment during this time period.

These parameters are obviously influenced by the large number of small and medium-sized banks in the U.S. And equally obviously, large mergers such as the recent Bank of America/Security Pacific combination will change these parameters somewhat. However, the important trend is the continuation of growth in the number of branches, driven by continuing population growth and geographic spread.

While banks and S&Ls continue to reduce traditional retail branch paying/deposit staff through both branch automation and branch substitution (ATMs, touch-tone phone service systems), they are simultaneously adding staff associated with face-to-face sales of new retail products such as insurance and securities. Meanwhile, there is little indication that other people-intensive service activities such as merchant teller, safe deposit, issuance of travelers' and cashier's checks, review and signing of loan documents, etc., are being reduced.

Forecasts that consumer electronic banking will cause significant reductions in branch staff are still premature. Except for a relatively few hard-core early advocates, there has been no rush by consumers to adopt any of the home banking systems that have been offered in the last 12 years. Any major increase in home banking will have to await two additional changes: PCs will have to become much more of a home utility, and the costs of the service will have to be lowered or eliminated entirely. Even at that, there will still be a significant proportion of an ever-growing population that simply prefers traditional banking methods.

Note that these statistics and trends are evident in an environment of increasing competition and "cream skimming" from brokerages, mutual funds and other nonbank financial firms, some of which do nearly all of their business via phone and mail. Like some leading-edge banks, a number of the leading-edge discount brokers and fund managers (Schwab, Fidelity) are offering PC-based systems for at-home access to customer accounts. Because their customer base is more sophisticated and the scope of their business lends itself to more automation, a larger proportion of their activity is handled electronically via touch-tone telephone or PC—including 50% of Schwab's daily volume of 250,000 calls for account balances, stock quotes and trades.

The net result of all these trends will be a continuing decline in total industry employment. However, this decline is not likely to be as great as many people project. Even if there is an increase in the pace of bank and S&L mergers, the effect will be primarily on headquarters staff: in general, this is where the effect of consolidation is most heavily felt. As noted above, the total number of banking offices increased during the 1984-1991 timeframe, despite the well-publicized mergers and failures. Given that this increase is driven by demographic factors, there is no reason to believe that the trend will change.

2. Bank Profitability

Despite the many doom-and-gloom discussions of S&L bailouts and bank failures, the industry overall is basically sound, growing and profitable. Exhibit II-8 presents a detailed breakdown of income and expense for commercial banks during the period 1984-1991. Although this is not a traditional analysis, the presentation is structured to make several key points.

EXHIBIT II-8

Banking and Finance

Income and Expense Breakdown of Insured Commercial Banks: 1984-1991 (Data in Millions of Dollars)

Year	Net Interest Income	Net Non-Interest Expense	Net Before Loan Loss, Securities Taxes, etc.	Provision for Loan Loss	Security Gains (Losses)	Extra-ordinary Items	Provision for Income Taxes	Net After-Tax Income
1991	121,901	(64,948)	56,953	(34,274)	2,966	687	(8,285)	18,047
1990	115,499	(60,853)	54,646	(32,084)	482	648	(7,691)	16,001
1989	112,187	(57,155)	55,032	(31,031)	801	309	(9,539)	15,572
1988	107,245	(56,371)	50,874	(17,164)	280	812	(9,988)	24,184
1987	99,887	(55,763)	44,124	(37,544)	1,427	201	(5,404)	2,804
1986	94,937	(54,373)	40,564	(22,106)	3,951	276	(5,266)	17,419
1985	90,898	(51,311)	39,587	(17,774)	1,565	228	(5,629)	17,977
1984	81,268	(47,306)	33,962	(13,816)	(140)	218	(4,721)	15,503

Source: Federal Deposit Insurance Corporation, Division of Research and Statistics, "Historical Statistics on Banking: 1934-1991"

First of all, net interest income (interest income less interest expense) has been growing throughout the period. Net non-interest expense (non-interest income less non-interest expense) has been growing more slowly than net interest income, providing a growing net before loan loss.

Loan losses, securities gains/losses, taxes, etc., are cyclical expenses based on a combination of regulatory and economic trends, and the overall industry level of these cyclical expenses is only indirectly related to the rate of bank failures. Following a steep rise from 1984 to 1988, bank failures actually declined by 50% during the 1988-1991 timeframe, while loan loss provisions continued at a high and growing rate.

As indicated earlier, banks are now largely over-reserved for LDC debt. Problems in the junk bond and real estate portfolios are being worked out, and consumer defaults are still at an acceptable level. Overall yield spreads have widened in the last several years as the Fed has managed to drive down interest rates to a 30-year low. As a result, 1992 was a record year for bank profits, relaxing some of the pressure on previously troubled banks.

Most bank failures stem from management problems, such as undertaking high-risk loans, rather than from overall economic factors. As a result, at the same time that regulators have been tightening capital adequacy requirements and shifting toward more risk-based approaches to determining capital adequacy requirements and deposit insurance premiums, they have also tightened lending guidelines, thus curbing the opportunity for a repeat of the speculative excesses of the 1980s.

In the short run, banks have also increased their purchases of "safe" assets such as Treasury securities, which do not carry the reserve requirements of ordinary loans. Though this has caused a temporary shortage of lendable funds, exacerbating the problems of recovering from the recession, there should be a return to more normal patterns of lending once the banking system has accumulated enough capital to meet the new capital adequacy guidelines.

Where possible, banks have also been shifting more of their income into fee-based businesses. This makes banks more financially stable in two important ways:

- Fee-based income is steadier, and not as subject to cyclical business risk as interest income.

- Unlike lending income, where the loss of income from a defaulted loan also requires (in effect) a capital writedown to reflect the loan loss, a loss of fee income has little or no impact on capital. Most fee-based businesses are based on systems which [should] have been expensed, and current operating expenses (staff, occupancy, etc.), which can be easily changed.

As banks shift their operations toward the "virtual bank" model discussed earlier, it is also easier for institutions of all sizes to enter and exit specific lines of business as market conditions dictate. Although the importance of easy market entry is obvious, the issue of easy market exit is an important and often overlooked factor. If a financial institution drops an established line of business due to cost or profitability pressures, customers may transfer *all* of their business to another institution. In the virtual bank model, the identity of the service provider is irrelevant, allowing the institution to maintain account control, increase the proportion of its fee-based business, and stabilize its income base.

In summary, bank profitability is rebounding from the depressed conditions that started in 1987, and should continue to grow at a reasonable pace. However, most of the profits will have to be plowed back into higher capital ratios, so there will continue to be strong emphasis on cost control and limited expansion into new areas and activities. The key determinants of the industry's profit growth will be the Fed's ability to manage interest rates, and the consequences of the economic restructuring proposed by the new administration.

3. The S&L Bailout

Over the last several years, American taxpayers have watched as the federal government's management of the bailout of insolvent savings and loan institutions (S&Ls) faltered repeatedly and current and forecast costs have mushroomed. Within the last year, however, the situation seems to have improved somewhat. The Resolution Trust Corporation (RTC) has become more aggressive in the management and sale of assets acquired from failed S&Ls, as Congress and the finance and real estate sectors have come to agree that quick and efficient sales are better than lingering in hope that the markets will someday turn around.

Since December 1992, regulators have been required to take "supervisory action" against troubled S&Ls. However, the number of remaining thrifts that are likely to be transferred to the RTC is small (probably 25-30). Therefore, though the magnitude of the bailout is still uncertain, it is no longer the political football it once was. And recent changes in FDIC insurance rates, coupled with the improved profit picture for banks, have eliminated the discussion about banks perhaps following the path of S&Ls.

S&Ls have been helped by the same low-interest rate environment that has improved bank earnings. And the rate of defaults on mortgages held by S&Ls has decreased from the highs of the last several years. Nevertheless, the outlook for S&Ls is not as bright as for banks. S&Ls are constrained to a narrower range of service offerings than banks, and cannot enter many fee-based businesses. Therefore, any decrease in interest rate spreads will put a greater strain on S&Ls than on banks. And the concentration of S&Ls in the housing market makes their asset base more vulnerable to upheavals such as military base closings and other defense-related cut-backs.

In summary, the outlook for the thrift industry is similar to that of the banking industry: profitability and growth will be dependent on the same factors, and cost controls will still be paramount as institutions seek to raise their capital base to meet increasingly stringent regulatory guidelines. Although some S&Ls will merge into banks, or change their charters so as to become banks, there will continue to be a large and profitable core of S&Ls as part of the financial landscape.

4. Business Restrictions and Competition

a. Banking Product Options

Until very recently, banks have remained largely restricted by the 1933 Glass-Steagall Act from diversifying beyond basic banking functions—even from entering into related financial businesses such as mutual funds,

insurance, and real estate. However, in recent years the "wall" separating the banking and securities business has been steadily eroding. Banks are now allowed to sell a wide variety of securities on an "agent" basis. For example, large money center banks are now acting as selling, record-keeping and trust agents for corporate commercial paper, generating fee-based income in place of the interest income they used to receive from lending to these same corporate customers. Banks are also entering the asset-based underwriting business by securitizing portions of their loan portfolios (credit cards, auto loans, etc.).

In addition, banks are now starting to win approval for equity-securities underwriting, which the Federal Reserve first granted to J.P. Morgan in 1990. Banks are now also selling stocks, bonds, mutual funds and annuities to their retail customers, often in affiliation with insurance company subsidiaries that provide the staff, training, and securities and insurance licenses. In an interesting competitive twist, stock brokerage firms now want corresponding authority to enter the banking business—or at least access to the Federal Reserve's discount window for emergency borrowing in a liquidity crisis.

b. Nonbank Funding Sources

One of the biggest changes to the banking business in the past decade is the availability to corporate borrowers of many nonbank sources of funds. Funding options are available from insurance companies and commercial credit sources, and there is a vastly expanded commercial paper market, aided by Wall Street brokerage and investment banking houses as well as the banks themselves.

In addition to simple lending, a wider range of bank-like services is available from essentially unregulated competitors like General Electric, Sears Roebuck, General Motors, and American Express. Many of the largest industrial firms have established captive finance arms to support the lease or purchase of expensive capital equipment. Because they know the customers, the products and the market, these firms are often able to make sharper credit decisions than a bank, and have more ways to dispose of equipment returned from lease or repossessed from defaulting borrowers.

c. Money Market Funds

One of the strongest challenges to the traditional deposit business of banks and S&Ls is coming from money market funds, which increasingly succeed in drawing basic deposits and certificate-of-deposit funds from banks. Money market funds tend to offer return rates 0.5% or more higher than bank rates because money market costs are lower due to the lack of branch bank costs, deposit insurance fees, and regulatory requirements to hold reserves against deposits. Most money market funds have improved the accessibility of customers' funds through check-writing privileges, Visa or MasterCard debit cards, ATM-based access, and ACH draft options.

d. International Issues

For some time now, foreign banks and finance entities have been increasing their competition for the U.S. corporate lending business. These banks have established a significant presence in the U.S. market, both through direct branching and through purchase of U.S. banks. At the same time, foreign deposits in U.S. banks have become somewhat more volatile as U.S. interest rates have gone down and the FDIC has started to pay only a fraction of uninsured deposits in some failed banks. By contrast, U.S. banks have continued to reduce their emphasis on direct corporate lending, instead focusing on the consumer market and fee-based services.

5. Overcapacity and Mergers

With the rise of alternative sources for lending and new opportunities for relatively high returns on deposits—and continuing restrictions on alternative business ventures—some analysts draw a picture of a traditional, local-based banking industry being overwhelmed by change. They say that 12,000 banks are too many for the new realities of the U.S. financial community.

As evidence, many cite the rapid consolidation in the midsized sector of the business since a 1985 Supreme Court ruling permitted a state to make local reciprocal banking agreements with other nearby states. Consolidation has given rise to a new class of super-regional banks that were built up through mergers and acquisitions. To date, money center banks have been excluded from such agreements because states view such banks as too powerful. Some expect this resistance to erode soon, however, as states permit acquisitions from out of the region. Wider geographic arrangements may still prove limited, however, because the economies are far greater on an in-market deal, in which operations can be centralized without being far from either player.

Most mergers have resulted in the closing of duplicate branches and heavy staff cuts, and thus strong local opposition has been common. In some cases, rather than being allowed to close branches and eliminate competition, state and federal authorities have required banks to sell off some merged branches to other banks. Such actions, however, have not slowed the pace of mergers and acquisitions, and some analysts predict that by the millennium, $300 billion-$400 billion banking giants will dominate the economy.

Although this prediction is probably correct, it is also irrelevant. With the top 300 banks (2.5% of the total number) controlling nearly 65% of the nation's bank deposits as of the end of 1991, and many banks having over $100 million in assets, it is clear that a small number of large banks already dominate the industry—to the extent that it can be dominated. However, in 1984 the top 300 already held 60.5% of the total deposits, so

the much-heralded merger and consolidation trend has done little to increase the net concentration of power and assets at the top of the industry.

Despite local opposition, it seems likely that there will be more acquisitions of midsized banks (with assets in the $1 billion to $10 billion range) by recently established or new super-regionals. Such mergers clearly can be rational from a cost-cutting standpoint. Once merged, the larger institution's competitive position can be improved by the opportunity to offer a broader range of banking services and to spread the cost of more-sophisticated computer systems over a broader base.

On the negative side, in terms of local and human impacts, some see as many as three-quarters of a million bank employees laid off through such mergers in the next decade. However, considering the demographic factors noted above, it seems unlikely that there will be such a 50% reduction in banking employment within the next ten years.

INPUT's view is that the merger/acquisition trend is largely overblown. It is clear that there are economies of scale in processing, and that there are more branches than necessary in many large cities. However, the increase in outsourcing options provided by the virtual bank model makes it possible for a large number of small banks to survive as profitable niche operations. Consolidation will largely occur in the upper end of the business as restrictions against multistate branching are relaxed and regional and money center banks continue to merge and acquire other institutions. As previously noted, branch expansion will continue despite mergers, largely due to demographic factors.

6. Outlook for Regulatory Reform

As alluded to earlier, banking regulatory reform in some form seems inevitable, although the final shape is anything but clear. The following paragraphs examine some of the more important regulatory activity.

a. Capital Ratios

The major banking industry regulatory change to date (beyond the S&L bailout structure) is that banks' capital-reserve requirements have been raised significantly, which cuts the total volume of loanable funds. Banks at all levels are under such increased-capital-ratio regulatory mandates. Under the FDIC Improvement Act of 1991, regulators can act to curb practices such as aggressive overbidding for deposits if a bank is not well capitalized. And regulators are now required to step in and take control *before* a bank fails, if its capital ratios are below acceptable standards.

b. FDIC Insurance Fund

Although the FDIC insurance fund had a negative $5.5 billion balance as of June 30, 1992, neither the Congress nor the FDIC seems worried about it. Insurance premiums have been raised and will stay elevated until the year 2001, at which time the FDIC projects that the fund will emerge from its deficit position and start rebuilding. This projection will obviously change with changes in interest rates and the overall economic scenario, but banks and regulators agree that modest changes in premium levels, combined with the move to risk-adjusted premiums and risk-adjusted capital adequacy standards, will be sufficient to restore both the health of the industry and the integrity of the fund.

c. Industry Restructuring

The wide range of bank reforms proposed by the Bush administration fell on deaf ears as Congress and the public focused on specific short-term fixes (e.g., the FDIC Improvement Act of 1991) and the prospects for the 1992 election. Despite the appointment of Lloyd Bentsen as Treasury Secretary, the Clinton Administration has not yet formulated any coherent view of the future structure of the financial services industry.

Among the simple issues waiting to be addressed are the limits to interstate branching, and the future roles of the panoply of federal regulatory agencies, including the Federal Reserve, Treasury, Comptroller of the Currency, FDIC, Office of Thrift Supervision, and National Credit Union Administration. Further out are the more fundamental structural issues of the Glass-Steagall wall separating banking and underwriting, and the wide variety of issues regarding a level playing field for all parties—including uniform standards for capital adequacy, insurance, and tax treatment for all categories of institutions.

Blank

Information Systems

Based largely on primary-research interviews with selected banking and finance firms, plus secondary research using other industry sources, this chapter examines the global issues driving the IS function, outlines how the banking and finance industry uses information systems, and details the key business and technical issues facing information systems management, as well as the impacts of key new technologies. In addition, a review of organizational control of, and budgeting for, information systems provides the foundation for a discussion of key objectives and plans for information systems departments within banking and finance institutions.

A
Global IS Issues

As the industry approaches the middle of the 1990s, five key issues, as noted in Exhibit III-1, are influencing the course of information systems in the banking and finance marketplace and virtually all other industry segments. First are the structured, planned changes that are occurring in both the industry and the data processing function. These changes, which are often characterized as "business re-engineering," are being driven by the economy, regulation, technology, competition and other pressures. The re-engineering process forces individual firms to consider how they currently perform their core business activities, and how they might restructure both internal processes and external relationships to improve their overall performance.

Among other considerations, this analysis forces an evaluation of where the IS function is performed, including what portions of it (up to and including the total IS function) can be most cost effectively performed outside the institution via outsourcing. Mergers, consolidations and general budget constraints drive downsizing considerations, to both reduce the inherent redundancies of merged organizations and to trim the organizational excess resources that accumulate during periods of growth and relative technological stability. Finally, open systems and networking are making it easier to become part of the national and global marketplace and

take competitive advantage of the many new applications and service offerings that such standards and networking resources encourage.

EXHIBIT III-1

Banking and Finance Marketplace—Global IS Issues for the 1990s

- Re-engineering
- Outsourcing
- Data center consolidation/restructuring
- Downsizing
- Open systems/networking

To see how these global issues affect a specific industry sector, it is necessary to understand the characteristics of that sector. The following section outlines the IS environment of the banking and finance sector in terms of the applications processed by that sector.

B
IS Applications Environment

The applications environment of the banking and finance industry may be segmented into three categories of systems:

- Generic and cross-industry applications to support standard business functions
- Internal applications to support the institution
- External applications to support specific lines of business

Generic and cross-industry applications used by banking and finance firms are common to all industries, and are described in other INPUT reports. The other categories are industry specific. Exhibit III-2 lists some of the major applications that are unique to the banking and finance sector. The characteristics of these applications are described below.

EXHIBIT III-2

Banking and Finance—Industry-Specific IS Applications

Internal Applications

- Banking Infrastructure
  - Branch Automation
  - Customer Information File
  - MIS/Financial Reporting
  - Tax/Regulatory Compliance
  - Other Miscellaneous
- Treasury Management
  - Asset/Liability Management
  - Portfolio Management

External Applications (Product/Service Support)

- Payment/Deposit
  - Check Processing
  - Retail Electronic Transaction (ATM/Debit Card) Processing
  - Deposit Processing
  - Time Deposit Accounting
  - Corporate Trade Payments (ACH, etc.)
  - Account Reconciliation
  - Corporate Treasury Management
- Retail Loan
  - Personal Loans
  - Mortgage Loans
- Credit Card
- Commercial Loan
  - Corporate Loans
  - Corporate Money Market
  - Equipment Leasing/Industrial Finance
- Corporate Trade Finance (Letter of Credit, etc.)
- Trust and Agency
  - Corporate Trust/Agency
  - Pension Trust
  - Personal Trust
- Brokerage
  - Trading
  - Retail Brokerage Support
  - Back Office (Clearing/Settlement, Customer Records)

1. Banking Infrastructure

These applications generally support multiple products, services and customer groups, or provide information required to manage the institution.

- *Branch automation* systems support tellers and "platform" (marketing and customer service) staff, providing on-line access to customer records and facilitating administrative tasks such as account opening/maintenance, transaction authorization, correspondence, etc.

- *Customer information files* integrate data from account-oriented processing systems (checking, savings, mortgage loans, etc.) to provide an overall picture of a customer's relationships with the institution, facilitating decisions such as credit extension and fee calculation, and highlighting opportunities for cross-selling other products and services.

- *MIS/financial reporting* applications provide data for internal management to assess institutional performance by customer group, product line, branch, etc.

- *Tax/regulatory compliance* systems support the wide variety of external reporting and control requirements of a financial institution.

2. Treasury Management

These applications support the overall control of the institution's financial position.

- Asset/liability management systems track the maturity and interest rate profiles of all the institution's assets (loans and securities) and liabilities (deposits) to ensure they are properly matched and any imbalances are properly hedged.

- Portfolio management systems control the institution's portfolio of investment securities (bonds, T-bills, etc.).

3. Payment/Deposit

Payment/deposit applications support all forms of transaction and deposit processing activity—retail and corporate—except credit card transactions.

- *Check processing* includes the physical handling of checks (clearing) and the account maintenance for both retail and corporate customers of all transaction-oriented accounts.

- *Retail electronic transaction processing* covers transactions that are initiated by the consumer through electronic terminal devices.

- *Deposit processing* is the physical handling of deposits, from the single check received over the counter to the armored cars full of checks and cash that arrive at a bank after a long holiday weekend.

- *Time deposit accounting* includes the entire spectrum of non-transaction deposit products offered by financial institutions, from passbook savings accounts to jumbo CDs and overnight corporate money market deposits.

- *Corporate trade payment* covers both the transmission and receipt of payments by corporations, whether paper or electronic. It includes EDI, lockbox, retail ACH payments and debits (e.g., Social Security deposits, pre-authorized insurance payments).

- *Account reconciliation* provides electronic records of checks paid so firms can reconcile bank statements with their accounts payable records.

- *Corporate treasury management* systems allow corporate treasurers to monitor daily account balances, move funds between accounts, and invest/borrow as needed, all via terminals in the treasurer's office.

4. Retail Loan

Retail loan applications fall into two major categories:

- Personal loan processing covers everything except mortgage loans. This includes both unsecured lines of credit and collateralized transactions such as car loans.

- Mortgage loan processing includes all types of fixed and variable rate programs, different forms of collateralization, and the management of loan pools which may be sold in secondary markets.

5. Credit Card

Such applications include both issuer (cardholder) and acquirer (merchant) processing.

6. Commercial Loan

Commercial loan applications vary depending on the nature of the lending activity and the associated collateral.

- *Commercial loans* often involve large dollar amounts and complex, customized legal arrangements that require detailed tracking of the borrower's financial status. They may also be syndicated, requiring the "lead" institution to act as a loan servicing agent for the participants that each own a piece of the loan.

- *Corporate money market* activity may involve the bank both as a buyer of commercial paper and as an issuing agent on behalf of its corporate customer.

- *Equipment leasing/industrial finance* involves the finance of goods or equipment, where the items financed are used as collateral for the loan.

7. Corporate Trade Finance (Letter of Credit)

These activities include a combination of credit extensions, international payments, and the tracking and analysis of a complex set of documentation.

8. Trust and Agency

Trust and agency activities typically involve the institution acting on behalf of someone else to manage and process funds.

- *Corporate trust/agency* includes stock and bond transfer, dividend/interest payment, etc., on behalf of corporations and governments. It can also include such activities as processing parking tickets.

- *Pension trust* involves the management of all kinds of pension funds, from individual IRAs and Keoghs to large corporate retirement plans.

- *Personal trust* involves the management of a diverse set of assets and payment obligations on behalf of individuals.

9. Brokerage Systems

Brokerage systems support three main categories of users:

- *Trading* systems include all of the electronic information services that provide data feeds and information displays (stock quotes, etc.) to traders and brokers. Analytical systems are also an important component.

- *Retail brokerage support* systems provide brokers with access to both market data and customer records, and allow brokers to enter orders on-line.

- *Back office* systems handle the transfer of securities and the maintenance of customer account records. They also handle the brokerage firm's own securities portfolio and its own market activities (securities lending, etc.).

Another perspective on the banking industry can be gained by examining the transaction volumes associated with some of these applications. Exhibit III-3 outlines the processing capabilities of a leading bank as of January, 1993. One notable statistic is that paper transactions (checks) still outnumber electronic transactions by a 5-to-1 ratio. In an operation of this scale, there will obviously be an opportunity for cost savings as image processing technology matures—even if the check volume were to be cut in half. Another notable point is the relative automation of the data centers: 50% of the tape mounts no longer require manual intervention, reducing both the need for operators and the potential for operator error.

EXHIBIT III-3

Banking and Finance

Processing Capabilities

- 20 million checks processed per day
- 1.2 million bank card drafts processed per day
- $300 billion dollars accounted for daily
- 4 million on-line transactions processed daily at $60 billion
- 700,000 transactions worth $47 billion processed daily for corporate customers
- 15 million statements generated a month
- 50,000 workstations on-line daily
- 1,800 local-area networks on-line daily
- 5,000 ATMs on-line 24 hours a day
- 110,000 customer phone inquiries handled per day
- 600,000 tape mounts per month, 50% of which are automated using SILOs

Source: Private Communication

C
IS Response to Environmental Forces

1. Overall Cost Reduction Strategies

Exhibit III-4 notes some of the strategies pursued by large banks and other financial institutions to either contain or reduce costs in response to the environmental pressures discussed in Chapter II. In general, these institutions are asking themselves:

- Should we be doing everything we are doing?
- Can we do it cheaper?
- Can someone else do it for less?

EXHIBIT III-4

Banking and Finance

Cost Reduction Strategies Applied by Financial Institutions to the IS Function

- Reduced product development/customization
- Standardized on fewer application systems
- Reduced maintenance expenditures
- Reduced internal DP staff
- Reduced use of outside consultants
- Consolidated networks and data centers
- Outsourced applications and/or operations

2. Cost/Benefit Analysis

As part of the process of controlling costs of existing operations, many financial institutions are questioning the basic justification of some previously "sacred" expenditures. Even though bank profits have risen sharply in the last two years, some critics have argued that many banking systems investments—ATMs in particular—have lowered bank profits, not raised them, by introducing new costs without corresponding financial benefits. Costly new products and attempts at product differentiation are another area in which extensive investments do not appear to have provided appropriate rewards.

In such cases, it appears that bank information systems have become costly, competitively driven investments that have not provided either significant competitive advantage or positive returns on investment. The

emphasis for bank investments, now and in the near future, is on demonstrating quantifiable benefits before money is allocated, and then managing the investments to ensure that benefits are achieved in practice. This applies not only to systems, but to all other categories of expenditure as well.

3. Cost-Cutting Efforts

By restricting the scope of systems development and maintenance activities, and concentrating on improving the cost/performance equation in delivering core functionality to users, many finance industry managers have managed to handle ever-increasing transaction volumes while actually decreasing their operating budgets. One of the reasons for this is the constantly increasing cost/performance of hardware, coupled with changes in the pricing strategies of software vendors (see Chapter IV for more on this issue). However, the traditional cost-cutting tactics listed in Exhibit III-4 are also a significant factor.

In this exhibit, consolidation refers to internal efficiencies, as opposed to those resulting from mergers or acquisitions. Decreases in the use of contract programming, layoffs (and attrition), system standardization and reductions (where possible) in maintenance expense are cost-control efficiencies that banking—and virtually all other industry segments—found to be prudent as the economic impacts of the recession affected a larger and larger portion of the economy.

These consolidation efforts represent the reversal of an earlier trend toward decentralizing systems responsibility in large organizations to the level of the individual business unit. Though this earlier decentralization provided improved responsiveness to user needs, it also created substantial redundancies, inefficiencies, and interapplication communications problems. The current trend in large organizations is toward corporate development and operation of centralized utility services (processing centers, data bases, networks) that support decentralized business applications development and processing.

4. Outsourcing

As a result of cost consciousness and a desire to return to their core banking business, many more institutions now favor shifting to a processing service or to outside systems operation of data facilities. In addition to direct operating-cost benefits, such arrangements generally free bank capital, which these days must be husbanded carefully in the face of regulators' requirements for higher capital ratios.

The extent of outsourcing varies considerably by function and application. For example, high-cost, capital-intensive, leading-edge, technology-intensive activities are particularly good candidates for processing services

or systems operations outsourcing: EDS and Perot Systems are currently estimated to handle nearly 50% of the total U.S. check processing volume, and there are only 500 vendors worldwide that handle the processing for Visa's 20,000 member banks.

Other vendors, such as Systematics, have long offered clients a flexible mix of traditional IS outsourcing options, including applications software, processing services, and combined platform/applications management. Finally, going beyond the bounds of the IS department, some vendors are taking over entire client departments and running them on a service bureau basis (e.g., Arthur Andersen running a bank's entire accounts payable department).

Exhibit III-5 presents the results of a recent *American Banker*/ Ernst & Young survey, showing what percent of the industry outsources specific types of activity.

EXHIBIT III-5

Banking Industry Outsourcing Arrangements

Activity	Type of Processing*	Already Outsourced	Considering Outsourcing	Not Outsourced Considering
Credit Card Merchant Processing	B	52	3	45
Trust Processing	B	39	–	61
Mortgage Processing	B	33	13	54
Student Loan Processing	B	28	8	64
Mutual Fund Processing	B	26	1	73
Cash Management	B	6	1	93
Credit Card Issuance	F	34	–	66
Securities Safekeeping	F	20	–	80
ATM Driving/Switching	F	14	15	71
Data Center	F	14	2	84
Network Operations/Management	F	13	8	79
Applications Development/ Maintenance	F	4	18	78

*B = Line of Business Processing

F = Functional Processing

Source: American Banker/Ernst & Young Survey

5. Downsizing

Some banks are taking advantage of increasing mainframe cost/performance and technological advances to downsize from multiple data centers. In addition, many banks are starting to strip away peripheral functions (e.g., data entry, simple queries) from mainframe systems and place them on distributed client/server systems. However, relatively few banks are undertaking the up-front investment to downsize by moving mainframe-based processing systems to networked PCs and workstations.

In addition to the initial investment, a major obstacle to using the PC environment is that the kinds of operations now on the mainframe, for most midsized and larger banks, cannot yet be handled effectively on the smaller platforms, even given recent advances in processing power. Although PC MIPS capacity has increased at a dramatic rate, these systems are still subject to a three-dimensional "bandwidth" limitation, having inadequate processor memory space, I/O channel capacity, and DASD capacity to handle large-scale banking applications.

Current PCs and workstations are not designed to handle the large volume of data (measured in Gigabytes) required by the operations of a large bank. Nor do they possess the level of sophistication in operating system and data base software required to support complex banking applications. Finally, most of the high-volume peripherals that are integral to core banking functions (such as check-processing systems) are available only for mainframe attachment. A new class of such systems—designed specifically for use with networked PCs and workstations—will be required before downsized systems can supplant mainframes in banks.

6. Technology

Several key technology issues facing banking and finance systems managers have significant business implications as well. In the cost-controlled environment faced by most banks today, new technological investment is seldom a primary planning topic. The most important issue, typically, is finding new ways to use existing systems more efficiently, including opportunities to downsize operations. However, once the downsizing or outsourcing decision is made, the potentially disruptive impacts must be managed carefully.

The apparent short-term exception to limits on systems investment is funding of the transition from older bank data base systems to relational data base management systems (RDBMSs). There are several key motivators for this shift. First, in situations where a bank has taken over or merged with one or more other banks, there is the need (near- or long-term) to integrate each bank's separate processing systems. Implementation of an RDBMS can aid this integration.

Second, bank processing systems have historically been developed on a product-line basis, processing individual records for each account on the system. Individual clients may have no, one or many accounts on any given system, and any integration or interface between systems is typically handled by transferring files from one system to another. The early implementations of the Customer Information File (CIF) concept generally relied on just such extracts from individual application files. Loading these extracts into a relational data structure facilitates the kind of integrated account analysis that is required to implement "relationship banking" service levels throughout the organization. Such analysis is useful for routine transaction processing by tellers, credit approval and marketing by platform officers, and other activities such as cross-selling promotions and direct mail campaigns.

Finally, requests for executive information systems, to better manage the business in the competitive environment of the 1990s, generally require RDBMS technology.

7. Disaster Recovery

As mentioned earlier, there is an increased regulatory emphasis on disaster recovery. This has led processing services firms that specialize in this area to develop new and more sophisticated capabilities to support their clients. Among these capabilities is transaction shadowing for real-time systems, a situation in which transactions processed by the client's data center are simultaneously sent via dedicated communications lines to the disaster recovery center, so that there is immediately available backup of all transactions processed up to the moment of failure. In addition, backup power supplies and alternate communications facilities (e.g., VSAT satellite links) are becoming increasingly powerful and flexible.

D
Impact of New Technologies

Some new technologies are affecting the way banking and finance firms design and implement their information systems.

1. RDBMSs

RDBMSs, especially IBM's DB/2, are already installed or are being installed at many large and midsized banks. Given the competition for deposits versus money market funds and other nonbank investments, many banks and S&Ls want to emphasize relationship banking, which takes into account *all* of the customer's business with the institution. Relationship banking makes installation of an RDBMS a competitive necessity.

2. Imaging

Imaging, at this point, appears to be the technology that everyone is familiar with, everyone is studying, but no one has yet fully implemented. Although there are certainly cost and technology issues involved, incomplete implementation is also partly a matter of style and perceived customer value.

Over a decade ago, Amoco Oil Company pioneered capturing digitized images of customer signatures and notes from its charge slips and printing them on the customer statement. Taking this one step further, American Express pioneered imaging of the entire charge slip record. By contrast, Visa and MasterCard did away with moving paper and started sending electronic data many years ago.

American Express stayed on a paper-based "country club billing" operation for several reasons:

- Customers supposedly liked it.
- AMEX felt it conveyed an old-shoe, "upscale" image.
- Unlike the bank cards, AMEX had no financial institution partners to work with in capturing and truncating the drafts.

Now, however, some of these advantages are becoming moot. With the advent of electronic draft capture for small retail transactions, and the computer-based interfaces from large merchants such as Macy's and travel and entertainment vendors such as hotels, airlines and rental car companies, most of the "imaged" charge slips on an AMEX bill are simply paper-wasting reproductions of data that could be printed on one or two lines of an itemized statement.

Aside from the small-scale, departmental "file folder" systems being offered by turnkey vendors, several types of imaging systems are being examined by most sizable banks. Variations include imaging of checks and automatic computer recognition of the check amount during proof and encoding operations, moving the images to statements (rather than further handling of the paper checks), direct output of lengthy documents to image systems rather than paper (e.g., transaction journals, account ledgers and other audit trail items), and capturing the many nonstandard documents required for mortgages and other loans in image systems. Two goals for imaging systems are flexible access and the satisfaction of legal record retention requirements.

The increasing maturity of three technologies—networking, imaging and client/server computing—is finally leading to rapid growth in distributed departmental "file folder" imaging applications. These applications

require high-performance LANs and graphical workstations, both of which have been significantly reduced in cost over the last several years. And the growing understanding and acceptance of the client/server paradigm, together with new implementation tools, has made it easier to develop and implement customized imaging applications.

The stumbling block for imaging is fixed costs—complete systems range as high as tens of millions of dollars. Today's cost-cutting environment tends not to support such investments without clear proof of short-term payback—which, at this time, is not readily apparent for most large-scale imaging applications.

3. Expert Systems

In the mid-1980s, many observers saw expert systems as a bright new systems star for banking, especially for credit scoring, loan authorization, and credit card charge approvals. Although examples of all such applications exist, there appears to be relatively little enthusiasm among banks for moving further with expert systems. A notable exception is the deepening commitment to the Authorizer's Assistant expert system by the nonbank American Express.

A few software companies have captured the market for straightforward credit scoring applications, providing the analytical and implementation support necessary for their use. In other areas, however, the bottom line seems to be an extremely complex implementation process, coupled with a lack of documentation of hard-dollar payoffs, and the as yet undemonstrated ability of most systems to deal effectively with enough of an application area to cost-justify their use.

4. EDI

Electronic data interchange, the direct computer-to-computer transfer of information such as orders and deliveries, as well as information about payments, continues to have steady growth outside of the banking sector. Although all banks routinely use electronic ACH (Automated Clearing House) facilities and wire transfers, few apparently see themselves in future roles as significant EDI intermediaries. This stems from three basic factors:

- The already-entrenched position of EDI service bureau vendors outside banking, and the fact that over 95% of EDI traffic is unrelated to payments
- The fact that the ACH network is not oriented toward handling nonfinancial information, and the late-emerging capability of ACH to support detailed remittance advice data

- The complexity and cost of developing the business/systems interface to provide clients with a proper financial EDI interface

In addition, the market is small, and although it is growing (in terms of volume) at 50% per year, it is still not a lucrative business for banks. As a result, most banks are offering payment services primarily to satisfy important customers, not to make money. At this time, 300 banks have the ability to do EDI processing, and about 50 are actively providing such services. Major providers include First Chicago, Mellon, First National of Detroit, Chase and Wells Fargo.

5. Workstations

For several years now, high-powered workstations have become the vehicle of choice for traders in banks and brokerage firms to monitor fast-moving financial markets, run complex analytical models, and execute transactions in stocks, money market instruments and financial derivatives. As costs drop and workstation power increases, their use for such applications will accelerate. To date, however, the banking and finance industry has found little other use for workstation technology, and future applications remain unclear.

6. Tools

Finally, CASE and 4GLs may have noteworthy roles to play in many institutions' evolution from multiple merged-bank systems to integrated systems. CASE in particular will have to deliver more effectively on its longstanding promise to help information systems managers re-engineer old systems before its application will become widespread.

7. The Future

As budget restrictions disappear and technology continues its functional and performance improvements, the new millennium should see levels of performance that exceed current capabilities by a significant amount. Exhibit III-6 notes Thomas Steiner and Diogo Teixeira's estimate of what the year 2000 will offer in performance improvements for various technologies. Even if only half the improvements are achieved, price/performance ratios will take another giant step up.

EXHIBIT III-6

Banking and Finance

Changes in Technology Performance Characteristics for the Year 2000 (1990 = 1)

Technology	Year 2000 Performance Improvement
Artificial Intelligence	20x
Image Processing	10x
Cost per Character for Rotating Storage Media	9x
Mainframe MIPs	4x
Relational DBs for Transaction Processing	3.5x
Software Development Technologies	1.5x

Source: *Technology in Banking*, Steiner and Teixeire, Dow Jones-Irwin, 1990

E

Organization and Budget

Although banking and finance industry budgets, in general, are highly centralized, the larger the institutions and the more decentralized the business units, the more decentralized the budgets. Chargeback systems are common but not typical of the majority of firms—again, this is more an issue of size than anything else. Even where there is no formal chargeback to business unit P&Ls, however, there is an increasing trend to cost out specific products and services, and to try to use this costing in setting fee schedules for services. Obviously, the more the business moves in the direction of fee-based income, the more important internal costing (and chargeback systems) will become.

Overall, corporate budgets in general and bank systems budgets in particular are tight. As noted earlier, this pattern holds for brokerages as well, but many nonbank financial services firms are enjoying higher profit levels and are investing more heavily than the sector average in information technology. Industry estimates for 1993 IT budget growth ranged from 5%-6% for all industry categories, to 3%-6% for banks and financial services. INPUT estimates the 1993 budget growth at 5% and expects 1994 to be at the same or a slightly lower rate until a strong, sustainable recovery is evident.

F
IS Department Objectives

Based on background and findings presented throughout this report, Exhibit III-7 summarizes the objectives and plans of the banking and finance industry's information systems managers. The exhibit provides guidance for vendors planning products and services for this industry.

EXHIBIT III-7

Banking and Finance

Objectives and Plans of Information Systems Managers

- Cope with tight budgets and cost controls
- Evaluate and implement outsourcing as appropriate
- Integrate merged-bank systems
- Upgrade disaster recovery
- Implement RDBMSs
- Support "relationship banking"
- Explore imaging
- Research (only) most other information technologies

1. Budgets

Vendors selling to information systems managers in the banking and finance industry must keep in mind that although profitability is up, regulatory requirements for higher capital ratios are in force, bankers are paying higher FDIC insurance premiums, and bank IS departments are still motivated to hold costs down. Therefore, budgets continue to be tight and across-the-board cost controls are in place at most banks. Brokerages are in a similar situation, and management is still concerned with costs after waves of post-crash layoffs and other belt tightening. The budgetary bright spots are the less-regulated, nonbank financial services firms. Nonbanks generally have not suffered as much from the recession or from large amounts of poorly performing LBO or real estate loans, and they are not subject to the extra burdens of mandated capital ratios and increasing FDIC payments. Nonbanks are also more likely than the banks or brokerages to be in growth situations that call for increased investments in information systems and services.

2. Outsourcing

The bright side of the budget crunch, of course, is that outsourcing continues to be more popular than ever. Banks, in particular, have always been strong users of third-party processing services, and more and more of them are moving beyond routine yearly evaluations of outside processing and taking the action required to shut down costly in-house systems. Increasingly—far more than in the past—they are accepting proposals from a third party to take over data centers and/or other systems operations (and often staffs) in exchange for a long-term contract guaranteeing yearly savings.

This situation has also produced significant opportunities for systems integrators, who can help the bank with complex consolidations or system/application upgrades. There is little indication, however, that nonbank institutions—brokerages or nonbank financial services firms—are particularly open to outsourcing.

3. Disaster Recovery

As noted, federal regulations have long mandated planning for disaster recovery. Recent major disasters—Hurricane Andrew, Chicago's flood, the Word Trade Center bombing and a continuing string of power problems in Manhattan—have pointed out the inadequacy of much current disaster planning. In particular, these situations have driven home the following points:

- Disasters are seldom isolated events affecting a single firm. More often, they are environmental situations affecting multiple firms and multiple elements of the infrastructure (power *and* communications *and* transport, etc.).

- In such circumstances, disaster recovery and support services may themselves be damaged, or overwhelmed by overlapping demands from multiple clients.

FFIEC guidelines provide wide latitude for the use of consultants, disaster recovery firms, etc., to address these issues, so there is no excuse for the IS manager to be uninformed or unprepared. Significantly, the institution's responsibility extends not only to its own operations, but to the operations of any and all vendors supporting its operations, *no matter what the failure mode.* For example, users of turnkey systems must consider the consequences of the vendor's bankruptcy on their ability to modify the system to accommodate ongoing regulatory changes (e.g., tightened funds availability schedules under Reg. CC).

In the previous world of centralized operations running proprietary systems, contingency planning and disaster recovery was much easier. The

current trend toward decentralized/distributed operations based on open, networked systems adds a dimension of complexity that many institutions do not fully understand. It may be that regulatory pressures will restore the primacy of the central IS function, if only to ensure that, if and when disaster strikes, someone can put it all back together again.

4. RDBMSs

RDBMSs are already in place, being implemented, or being planned by most banks. A main motivator is the assistance RDBMSs can provide in integrating records after a merger or takeover. Another motivator is the competitive pressure to offer relationship banking that ties together a client's multiple accounts. In terms of competitive positioning, the client becomes less likely to be lured away by another bank's offer of single statements and other integrated-account services. From the standpoint of service profitability, the bank with records organized in an RDBMS can use the data base connections to spot opportunities and expand the scope of account relationships with its best customers.

5. Imaging

Imaging technology is now being investigated at some level by most banks. The reality, however, appears to be that funding to purchase such systems—at least those at the top of the line in price and functionality—will be lacking at most banks in the near term. The current cost of image-based item processing systems is such that only the largest banks have the scale of operations to make them pay. However, to the extent that vendors can offer small or midsized file folder systems providing reasonable payback at low transaction volumes and for low front-end investments, there may be a good short-term market opportunity.

A key advantage of file folder systems is that they provide an opportunity for significant re-engineering of paper-intensive operations such as mortgage and letter of credit processing. Since these activities are among the last to become thoroughly computerized, and will still have to deal with large volumes of incoming paper for the foreseeable future, they provide one of the last pockets of potentially significant cost savings available from further automation.

6. Research

Other than imaging systems, most leading-edge information technologies will get only research (without development) attention in the short term because of the tight budgetary situation. As mentioned earlier, the exceptions likely will be found among the nonbank financial services firms, and certain specialized functions in the fast-changing world of brokerages.

Historically, American Express has led the way in image-based statement rendition, and a number of brokerages have pioneered the industry's effective use of networked workstations, graphical information displays, and expert systems. Similar leading-edge work may be done by these sectors in other new technologies over the next few years, although the prime candidates now appear to be extensions of recent work in those same areas.

Information Services Market

This chapter discusses the markets for information services in the banking and finance industry. Information in this chapter draws on statistics presented in Chapter I, and trends and issues discussed in Chapters II and III, to summarize forecasted growth of the markets for information services.

One key item discussed is the trade-off between prepackaged solutions—such as processing services, applications software, and turnkey systems—and custom solutions that involve consulting or external systems development and systems integration support.

User expenditure forecasts are provided by industry segment and by delivery mode. Assumptions driving the forecasts are presented. Note that these forecasts do not include functional general-purpose information services, such as those in support of the human resources function, general accounting, or for generic planning and analysis. The markets for these types of information services are presented in INPUT's cross-industry MAP reports, rather than the industry-specific reports.

Section A, *Overview*, discusses the overall size and growth rate of the banking and finance industry's expenditures for information services.

Section B, *Delivery Mode Analysis*, segments the market's expenditures into INPUT's seven standard delivery modes.

Section C, *Industry Segment Analysis*, provides a restatement of this forecast in terms of the major market segments within the banking and finance industry. These segments are:

- Commercial banks
- Savings and loan institutions (S&Ls)
- Credit unions
- Brokerages and other financial services firms

A
Overview

After a flurry of well-publicized activity at the start of the decade, the outsourcing of bank and S&L operations seems to have slowed down somewhat. As noted below, the uncertainty of the times puts both users and vendors in a quandary regarding future investments in information technology. The key business and technical forces that will impact the banking and finance industry's use of information services during the next five years are summarized below.

1. Driving Forces

Capital Allocation - A key force driving many commercial banks and S&Ls toward outside information services is the need to cut costs and generate increased earnings to satisfy the regulatory requirements for higher capital ratios. Switching to either a processing service or an outside systems operator can move a banking institution's capital out of the data processing center and back into the bank's business. Also, many systems operations contracts include guaranteed annual savings over current costs.

Turnkey System Price/Performance - A different delivery mode—turnkey systems—is benefiting from recent price/performance advances in minicomputer systems, and the increased sophistication and performance of PC-based systems. These advances allow many turnkey vendors to offer small and midsized financial institutions significant power for in-house processing at much better hardware prices than in the past. Note, however, that such turnkey business often will come at the expense of the processing services on which such users relied in the past. In the most basic sense, it is this attractively priced in-house processing resource that is driving the "insourcing" trend for small and midsized banks.

RDBMSs - Many commercial banks and S&Ls are finding RDBMSs an appropriate technology to address two key issues: the competitive need to implement relationship banking (which ties together records of all a customer's accounts) and the need to integrate multiple systems and records in the current wave of banking industry mergers. Vendors of the basic RDBMS software environments and of the add-on software packages that extend RDBMS functionality—especially those that work with IBM's DB/2—are seeing such new opportunities.

Mergers and Acquisitions - Bank mergers and acquisitions continue to have mixed impacts on the various information services delivery modes. In general, any merger is going to cut back on the overall use of standard applications solutions. Although processing services tend to be the hardest hit because of their volume-sensitive pricing, vendors in all delivery

modes can suffer in mergers. In the case of applications solutions and processing support services (processing services, turnkey systems, applications software and systems operations), an acquiring bank is likely to cancel the outsourcing arrangements of its new subsidiaries and assume responsibility for this processing. Indeed, the reduction in combined processing costs is one of the typical justifications for these mergers.

The beneficiaries of merger activity are primarily firms that can provide specific assistance to the acquiring company in managing the integration of the target banks into their new parent. If new systems are needed, bank applications software vendors may see acquiring banks choosing to buy rather than build new and larger systems. Professional services firms and systems integrators will see the merging banks reach out for advice on systems modification or evolution and for full-scale contracts to integrate old and new systems. Also, systems operations vendors should keep a watchful eye on mergers to identify ripe opportunities to sell the advantages of outsourcing the expanded systems department functions.

Regulatory Compliance - The large number of small to medium-sized commercial banks and S&Ls are being driven harder and harder to maintain their systems' compliance with fast-changing banking regulations and reporting requirements. Packaged applications software vendors, processing services vendors, and system operators all can point out that they offer a central, economical approach to keeping the institution up to date—and in legal compliance—with such changes, so that banks can concentrate on the banking business.

Competition - Nonbank financial services firms will continue to be in relatively strong competitive positions (versus the traditional banking industry) in the near future, unless now-unforeseen new bank-like regulations are imposed. Many nonbanks are already strong users of network services, and act as both users and providers of processing services for credit card authorization and transaction processing. Nonbanks will prove to be good customers for:

- Banking applications software adapted to their specific needs
- Professional services to help nonbanks modify software or build custom systems to meet their unique needs
- Integration of expensive and complex new technologies (perhaps even imaging, which nonbanks can better afford than banks can, as demonstrated by American Express) into their systems
- Resources that contribute to operating systems in a cost-efficient fashion—to keep data processing costs stable even in the face of growing business and systems requirements

2. Inhibiting Forces

In contrast, a number of forces, discussed below, are inhibiting banking and finance firms' use of information services.

Uncertainty - Hardest to deal with is the uncertainty factor. The unfinished legislative agenda of the Bush administration leaves many structural and regulatory issues still unresolved, and the new administration is currently grappling with Congress on a host of other issues. With the future directions of the industry—and the economy—still in doubt, caution by bankers can be expected to limit changes in how they manage internal information systems and contract for outside information services. Vendors, in turn, need to be flexible in considering various scenarios and business planning frameworks.

Overcapacity and Delivery Mode Trade-offs - The industry is suffering from two kinds of overcapacity: too many institutions, and too many facilities. It is obvious that the current trend toward commercial bank consolidations will continue as long as regulatory authorities will allow, boosted by already established timetables for breaking down barriers to interstate banking. Although specific opportunities will emerge from this downsizing of the industry, the absolute number of sales prospects for information services vendors will drop. Meanwhile, competition for their business will increase as users are presented with a greater variety of options for standardized application solutions (processing services versus turnkey versus applications software).

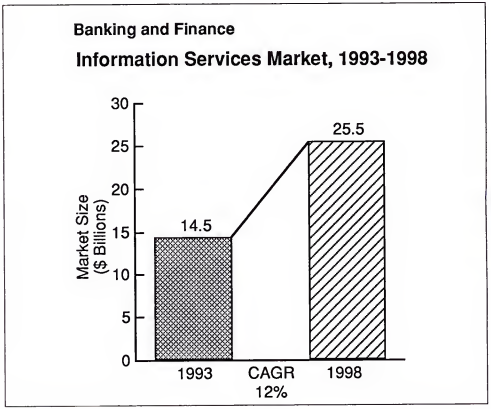
Brokerage Industry - The brokerage firms still represent the industry wild card. Although the market's performance has been satisfactory in terms of both price levels and volumes for the past several years, many view the future shape of the brokerage business as questionable. Although another long-term expansion and bull market will come sooner or later, the strong trend toward book-entry securities will continue to reduce back-office employment in brokerages. Brokerage management will remain cautious for some time and, following the example of credit cards, more of the brokerage industry's transaction processing may be outsourced to large vendors with significant economies of scale. Individual firms will, however, continue to pioneer the use of technologies like expert systems for specific functions such as currency trading.

Nonbanks - Similarly, nonbank financial services firms—some affiliated with major industrial firms and some diversified only in financial services—represent another uncertainty for information services firms. Historically, nonbanks have strongly favored in-house solutions, including building their own software rather than buying packages. As noted earlier, nonbanks tend to be larger institutions which generally have more money available for investment in information technology than commercial banks and S&Ls. Some, notably American Express, have been real pioneers.

There have been, however, very few cases in which outside information services vendors have successfully penetrated this market and maintained profitable, ongoing relationships.

Based on these driving and inhibiting forces, and other factors detailed below, INPUT projects the 1993-1998 information services market for the banking and finance industry as shown in Exhibit IV-1. As noted, INPUT forecasts that the overall expenditures in this market will expand from slightly more than $14.5 billion in 1993 to more than $25.5 billion by 1998.

EXHIBIT IV-1



Year-by-year detail is shown in the forecast data base (Appendix A). In addition to the driving and inhibiting forces discussed above and the delivery mode-specific trends outlined in the next section, a number of industry segment-based trends are at work behind this forecast. For example, some commercial banks should represent short-term growth markets for processing services and systems operations, for the reasons detailed earlier. The viable S&Ls, however, also have a sufficiently viable business and operations base that changes in their use of information services will be more the exception than the rule. The exception will be where pure cost-cutting is the motivator—one result of which could be an increased movement toward systems operations. Credit unions are already strong users of processing services, and little change is expected. The

forecast for nonbank financial services firms' use of outside information services will continue at about the same level for the reasons noted earlier.

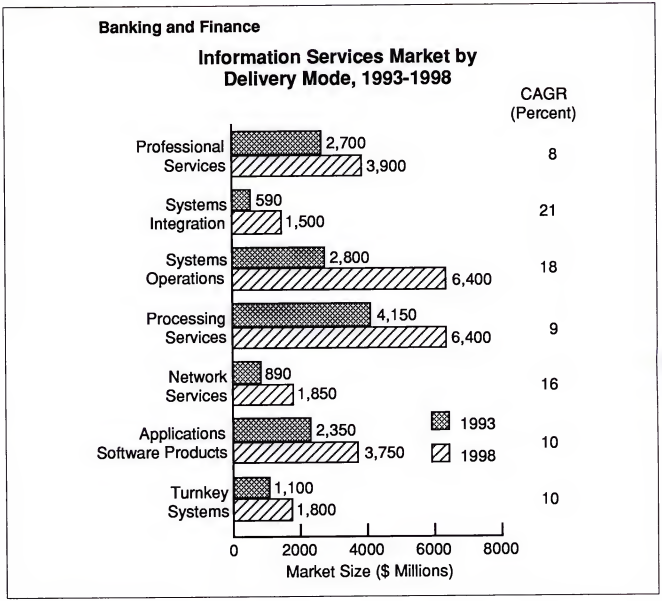
In terms of year-to-year growth rates, there is a general assumption that today's uncertainty regarding the future of the economy and the banking industry will ease over the next several years. The economy will eventually move away from its current state of confusion and stagnation, and enter a period of recovery followed by stability. Regulatory uncertainties should settle, consolidation and new ownership patterns will take place, and the re-establishment of stable banking industry operating conditions will lead to a period of renewed growth in the new banking business—whatever shape it takes.

Despite political hopes, INPUT does not expect to see a significant and sustained economic turnaround in either 1993 or 1994. This forecast assumes that the pieces for recovery will be in place and the first signs of recovery will appear in 1995. The year 1996 will be one of stronger economic activity, driven by election-year politics and the first real effects of the new economic reforms. Assuming another Democratic victory in 1996, the years 1997 and 1998 should see a return to more stable and consistent growth patterns. Vendors will see little change in user expenditures in 1993, with moderate growth occurring as the economic outlook stabilizes and recovery materializes. Everything is affected by the economic climate. When it improves, the recession is clearly over, and a period of recovery and growth can begin, there will then be a gradual return to the traditional growth patterns for information services offerings.

B
Delivery Mode Analysis

As shown in Exhibit IV-2, there are significant differences projected in the five-year growth rates for the information services delivery modes to the banking and finance industry. Forecast assumptions by delivery mode are noted in the following paragraphs.

EXHIBIT IV-2



1. Processing Services

The banking and finance industry's use of processing services has been strong relative to that of other industry sectors. Such use has always been heaviest by smaller and midsized commercial banks, S&Ls, and credit unions. However, during the forecast period, some commercial banks and S&Ls will merge into larger banks, which generally can be expected to bring processing services in-house for consolidated economies of scale.

Aside from merger-related factors, cost-related issues will be a significant determinant of processing services use. There will be some increased use of processing services by commercial banks and S&Ls of all sizes, which will shift to processing services to redeploy their capital away from in-house systems and toward meeting higher capital-ratio requirements. However, there will be a countertrend whereby some midsized and small commercial banks and S&Ls will find turnkey, minicomputer-based systems to be an increasingly cost-effective alternative to outside processing services' usage-based charges. This countertrend will be most important when the bank or S&L is growing, however—and not when capital is short.

There will be a constant increase in the use of credit cards and debit cards for all types of transactions—traditional merchant sales, ATMs, POS, etc. At the same time, there will be an even greater increase in transaction volumes for third-party card processing services, which will continue to enjoy highly competitive economies of scale. Another activity with similar economies of scale is check processing, an area in which two vendors already handle nearly 50% of the total U.S. transaction volume.

All brokerage firms are heavy users of network services to deliver stock quotes, news, etc., to both brokers and traders. The majority of terminals on brokers' desks are supplied by the large quote vendors such as ADP, Quotron and ILX. In addition, many smaller brokerages are heavy users of processing services, serving essentially as marketing and research organizations and outsourcing their back-office operations. With the trend toward elimination of stock certificates and back-office paperwork, an increasing number of small and medium-sized brokerages are likely to turn to outsourcing of their transaction processing operations.

Nonbank financial services firms typically have not been heavy users of processing services, and no change is expected in this pattern. However, for all types of financial institutions, increased focus on disaster recovery should increase the demand for backup services, including the associated testing and training needed to ensure the effectiveness of the backup plan.

Exhibit IV-2 shows the 9% CAGR expected in processing services based on these trends, as expenditures grow to more than $4.15 billion in 1993 and $6.4 billion by 1998.

2. Turnkey Systems

By bundling the required hardware and software into a single package, turnkey systems provide an easy-to-implement solution for many midsized and community commercial banks and S&Ls. This solution is at the price, of course, of generally providing less flexibility for users, thus placing them more at the mercy of the turnkey vendor. Turnkey systems do, however, generally provide the user with more flexibility than some processing services vendors' "one-service-fits-all" approach.

Whether the turnkey application is functionally oriented (e.g., mortgage processing) or a full-scale integrated package, the vendor typically supplies documentation and training as part of the contract, and provides continuing updates that maintain regulatory compliance and allow clients to provide competitive new financial products and services as they enter the market. This frees the smaller institutions from the impossible task of competing on the basis of technology, and allows them to focus instead on marketing and customer service.

Exhibit IV-2 shows the growth expected in turnkey systems, which is driven primarily by a new generation of minicomputer-based systems for banks and S&Ls. These systems increasingly offer cost-effective alternatives to outside processing services, especially for growing institutions wishing to avoid the use-sensitive transaction costs inherent in a processing service. Perhaps more important, the newly cost-effective turnkey systems significantly increase the level of control available to user organizations. INPUT forecasts the growth for this delivery mode at a 10% CAGR, going from more than $1.1 billion in 1993 to almost $1.8 billion in 1998.

3. Applications Software Products

The banking and finance industry has always made substantial use of packaged software products, especially among the high proportion of small and midsized institutions. Generally, only the largest firms have developed the bulk of their own software systems. Many standard packages are offered, although these often require modification to meet a particular bank's needs. Modification can occur in two ways, with no particular pattern except size of institution: smaller firms generally contract to the vendor or a third-party consultant (sometimes a small local contractor); larger firms use their in-house information systems staff.

To date, PC-based banking software products (except for spreadsheet-type utilities) have generally been restricted to specific departmental applications. There are few PC-based software systems robust enough to meet the high-volume transaction needs of most central banking functions. Sophisticated capabilities for security, rollback/recovery, distributed data entry, etc.—all required and available as standard data base and operating system services in the mainframe/mini world—are still generally unknown on PCs. In addition, few of the key, volume-based banking peripherals are available for PC attachment. Mainframes and minicomputers remain the rule for integrated core systems, although this rule may change with advances in power and sophistication of PC-based operating systems and data bases. (A related trend at the minicomputer level is covered in Section 2, Turnkey Systems.)

Mergers and acquisitions are having a significant impact on the software market. In general, acquiring banks do not purchase new applications software as part of a merger. Instead, they usually merge operations of the two institutions onto one platform using existing software packages. Although sometimes this may be on one of the acquisition's systems, it is typically on the (larger) acquirer's system. As a result, existing software licenses are canceled. Attempts by software vendors to stop acquirers from using existing software to process multiple institutions' work after an acquisition have generated such negative publicity and resentment in the industry that the whole pricing structure has come under fire. As a result, even existing licenses are starting to bring in less revenue, and software pricing has become much more competitive. These two factors—reduction in outstanding licenses and more competitive pricing—will modulate growth of software vendor revenues.

Exhibit IV-2 shows the growth expected in software products. Expenditures are expected to grow at a 10% CAGR, going from more than $2.3 billion in 1993 to almost $3.75 billion in 1998. In the short term, bankers increasingly will try to make do with existing systems except where competitive pressures—such as for RDBMS-based support of relationship banking—require new software investments. Later in the period, advances in PC power—CPUs, disk drives, operating systems, data bases, and high-transaction-rate peripherals—will lead to a new generation of PC-based software applications that will continue the steady workstation/PC applications software growth, while mainframe and minicomputer expenditures diminish slightly.

4. Systems Operations

Systems operations vendors (along with vendors of processing services) have benefited from the banking industry's recent efforts to cope with low profitability and regulatory requirements for higher capital ratios. A systems operator often offers to purchase a capital-consuming in-house data processing operation and guarantee the bank or S&L yearly savings over the course of a multiyear contract. Over the forecast period, this combination will continue to outweigh the institution's natural hesitation to give up corporate control over a key business resource. Note, however, that credit unions (which have few in-house systems) and nonbank financial services firms (which have few regulatory requirements and generally higher profitability levels) are largely exempt from such dynamics.

Exhibit IV-2 shows the growth expected in systems operations, based on these trends. Expenditures will go from slightly less than $2.8 billion in 1993 to almost $6.4 billion in 1998, growing at an 18% CAGR.

5. Systems Integration

The market for systems integration is closely related to that of professional services. The key distinction between professional services consulting and systems integration is who bears the ultimate responsibility for planning and managing a systems installation project. Consulting firms typically provide analytical or technical support as professional services to their clients, and seldom bear responsibility for the result of an implementation project. Systems integrators, in contrast, act as the general contractor on a systems project, assume project management responsibility, and generally bear some financial risk for the success of the project.

The complexity of today's information systems and services technologies and the rapid pace of technological change make it increasingly difficult to manage large-scale development projects—especially projects requiring a combination of in-house and outside resources. And in merger situations, in-house staff may be unfamiliar with the systems environment of their new partner and inexperienced with the specific problems of integrating or linking the partner's systems with their own. In addition to supplying management expertise, systems integrators typically provide a variety of proprietary tools and techniques that facilitate the technical task of integrating these multiple system environments.

Exhibit IV-2 shows the growth expected in systems integration. Expenditures are forecast to grow at an annual rate of 21%, from almost $590 million in 1993 to more than $1.5 billion in 1998. These numbers reflect the fact that, in the short term (1-2 years), relatively few commercial banks, S&Ls, or even brokerages—under current financial conditions—are undertaking complex new projects requiring systems integration services. Over the longer range (2-5 years), demand for the service will grow as the pace of bank mergers, consolidations and re-engineering of the IS environment begins to increase. The services of systems integration firms will be increasingly important to guide newly merged commercial banks through the complexities of systems consolidation. In part, the larger size of the merged organization—especially when there have been multiple, successive takeovers by one institution—eventually should drive many to cost-justifying larger in-house systems (with or without new technologies such as imaging) that systems integrators can help set up.

Strong and aggressive nonbank financial services firms are expected to make continuing large systems investments, providing some specific niche opportunities for systems integration firms. However, as these firms are relatively few in number, their impact on this market will be relatively small.

6. Professional Services

The use of professional services by the banking and finance industry is strongest, historically, in the area of contract programmers and other consultants who can satisfy specific programming and systems needs on a relatively short-term, project-oriented basis. There has also been secondary use of consultants for services such as overall systems evaluation, overviews of technologies and new technical options, and assistance in re-engineering business operations in the largest banks, brokerages, and nonbank financial institutions.

Exhibit IV-2 shows the growth expected in professional services. Expenditures for this delivery mode will grow from almost $2.7 billion in 1993 to $3.9 billion in 1998 at a CAGR of 8%. The 1993 forecast represents a significant increase from 1992, when economic and political uncertainties resulted in fiscal conservatism. Pent-up needs and merger/acquisition activity are driving an increase in 1993 expenditures, but continued restraint—the result of traditional industry conservative practices—will hold five-year growth to an 8% annual rate.

The trend shown for the use of professional services reflects continued emphasis on cost control. In this atmosphere, the first cuts generally are made in expendable contract programming and consulting services, as opposed to in-house staff. Also, despite the continuing rapid pace of change in information technologies, the smaller cash-strapped institutions generally will not pay for noncritical technology consulting in the short term. Even the largest banks and nonbank financial services firms—of which there are relatively few—will likely be conservative regarding expenditure for noncritical projects.

One exception to this trend is found in institutions that are adopting CASE tools and/or implementing client/server technology. In both situations there is an opportunity for vendors with specialized skills to provide both development support and training for in-house staff. As users try to reduce overall staffing levels while still retaining the "best and the brightest," there is also a move to outsource the maintenance work on old systems while giving in-house staff the opportunity to work with newer technologies and applications. Toward the end of the forecast period, an increase in the rate of institutional consolidation should create additional opportunities for professional services firms to consult with the acquiring firms on systems expansion and/or consolidation.

7. Network Services

Banking and finance industry firms generally are significant users of network services, especially for value-added data communication services and to a lesser extent for electronically accessed information services. The main use of network services is by banks and nonbank credit card issuers

and processors. Banks and other processors handle both sides of a purchase or ATM transaction, often through value-added access to networks such as Visa, MasterCard, Plus, etc., via packet network services such as BT Tymnet and US Sprint's Telenet.

Banking institutions and nonbank financial institutions are also heavy users of network-based credit reporting services, especially from giants such as TRW and Equifax.

Brokerages use on-line information sources—such as market quotation or information services like Quotron and Reuters—for regular or occasional access to multiple specialized information feeds to meet specific trading needs.

Exhibit IV-2 shows the growth expected in network services, based primarily on continuing growth in the use of transaction-related (debit and credit) cards. Additional growth from use by brokerages assumes a continuation or increase in current market volumes. INPUT forecasts expenditures to grow at a 16% CAGR for the next five years, going from more than $890 million in 1993 to $1.85 billion by 1998.

C
Industry Segment Analysis

In Chapter III, the banking and finance sector was segmented into commercial banks, savings institutions, credit unions, and brokerages and other financial services firms. Exhibit IV-3 provides INPUT's forecast for the segments of the banking and finance sector, and offers an estimate of relative market size.

EXHIBIT IV-3

Banking and Finance

Industry Segment Markets, 1993 and 1998

Industry Segment	1993 ($ Millions)	Total (Percent)	1998 ($ Millions)	Total (Percent)	1993-1998 CAGR
Commercial Banks	7,540	52	14,000	56	13
Savings Institutions	2,760	19	4,250	17	9
Credit Institutions	2,030	14	3,000	12	8
Brokerages and Other Financial Services Firms	2,170	15	3,750	15	12
Total	14,500	100	25,000	100	12

There are several disparate factors driving the growth rates in information services spending by each of the market segments in the banking and finance sector. The relatively high growth and increasing proportion of the overall information services expenditures by the commercial banking sector is tied to the sector's ability to leverage systems operations and systems integration offerings. These faster growing delivery modes are primarily driven by the medium-sized and larger banking institutions.

Brokerages and other financial services firms show a relatively steady but slightly lower growth rate than commercial banks. Brokerages, although emerging from the relative stagnation that persisted for years after the 1987 crash, are still operating cautiously in a market that rose significantly in 1991 and 1992, but has not yet shown a clear return to bull market conditions. Business growth may or may not accelerate soon, but crash and layoff memories and continuing budget restrictions will tend to result in moderate increases in information services spending.

The savings institutions and credit unions will see lower growth and a declining proportion of expenditures in the information services sector. These smaller institutions will be able to leverage the lower costs of client/server technology or stay with processing services and turnkey systems offerings, and are not inclined to frequent changes in applications software.

- For credit unions, INPUT assumes that no restrictive legislation to limit their low-cost popularity will be passed as part of federal banking regulatory reform. Enactment of such restrictions would, of course, shift these organizations to an even lower growth path.

- For savings and loans, the overall growth in information services expenditures will be modest, as some institutions will be merged and the remainder will fall back to a slow growth trajectory.

Blank

Vendor Competition

This chapter presents descriptions of information services vendors serving the banking and finance industry sector. The chapter is segmented into the following sections:

- Competitive Climate
- Participating Vendors
- Competitive Positioning
- Leading Vendor Profiles

A
Competitive Climate

The banking and finance industry sector is comprised of many diverse financial institutions (banks, S&Ls, and specialized institutions); thus, information services firms are presented with a very broad target market to which to offer their products and services.

However, despite the large number of financial institutions that conduct business within the U.S., the industry is dominated by a relatively small number of companies. As mentioned earlier in this study, approximately 65% of the nation's bank deposits are controlled by only 2.5% of the 12,000 banks. As a result of this oligarchical tendency, competition between information services firms for the top-tier accounts is extremely aggressive.

Business strategies developed by the information services firms that compete in the banking and finance industry are, in part, influenced by the following factors:

- Many midsized and large institutions still conduct most of their internal and external IS functions on mainframe computers because of the bandwidth limitations of personal computers.

- Small and midsized banks, in an effort to compete against large regional banks, are investigating the benefits of personal computer-based cash management systems, rather than expensive mainframe upgrades. Features offered by these systems include direct deposit of payroll for small business users, transfer of funds, and automated account reconciliation.
- Regulatory pressures to increase disaster recovery capabilities are acting as a catalyst for financial institutions to explore the benefits of RDBMSs.
- Financial institutions are evaluating their workflow processes and are looking to imaging technology to reduce the paper flow and increase productivity.
- Organizations are examining IS outsourcing as a method of controlling expenditures.
- There is increasing electronic interaction between banks/financial institutions and their clients.
- IS budgets are closely monitored and management is looking for measurable return on investment.
- Currently, bank failures are occurring at a decreasing rate.

B
Participating Vendors

A wide variety and large number of information services firms serve the banking and finance industry, without any pattern of dominance or concentration of market control.

Leading vendors are often banking-industry specialists, such as Systematics, yet many multi-industry vendors such as IBM and EDS also intensely compete for market share. Exhibit V-I presents a partial listing of IS firms and their correlating areas of business.

EXHIBIT V-1

Banking and Finance

Company Segmentation by Product/Service Delivery Mode

Company Name	Network Svcs.	Proc. Svcs.	Prof. Svcs	Sys. Int.	Sys. Ops.	Turnkey Sys.	Appls. SW
Advanced Computer Systems						x	
Andersen Consulting			x	x	x		
Control Data Corporation	x	x				x	
Dow Jones		x					
EDS	x	x	x	x	x		
First Data Resources	x						
First Financial Mgmt.	x						
Fiserv	x			x			
GEIS	x	x	x				
IBM	x	x	x	x			x
M&I Data Services	x				x		x
Mellon Information Services	x				x		
NCR	x					x	x
Perot Systems							
Quotron		x					
Reuters		x					
SAIC	x		x				
Systematics	x				x	x	x
TRW		x	x	x			

However, there are patterns in the kinds of services offered by vendors, based upon the size of the target institution and the nature of the application area supported. For example, most turnkey vendors are small firms targeting specific niche markets. In the mortgage processing area, laptop computers for loan origination and file folder imaging systems for back-office processing are significant turnkey markets. In the brokerage field, trader workstations with built-in analytic and display software are an important turnkey segment.

Processing services continues to be an area of increasing vendor concentration, due to the economies of scale in both operations and application development and maintenance. Full-service contracts, for which a vendor handles all of the client's processing, are typically associated with the very large number of small institutions (less than $50 million in assets). However, specialized services such as securities safekeeping are used by firms as large as Bank of America.

Applications software and professional services are provided—and purchased—by firms of all sizes. Again, the smaller vendors are in function- or-product-specific niche markets, whereas the larger vendors provide more global support in both applications suites and categories of service.

Systems integration and systems operations services are usually found in the larger vendor and client companies. In both of these delivery modes, the client must have a large enough operation to realize significant improvements in cost/quality control by turning over development or operations to an outside company. Additionally, the outside company must be large enough to deliver these economies of scale. Systems operations vendors often have guidelines that suggest a minimum asset base of $250 million before a systems operation contract is worthwhile.

Electronic information services are provided by only a few large vendors, but are used by institutions of many sizes and types. In general, the vendors specialize by type of information provided, and the usage is a function of the client's overall size and business volume.

In summary, competition is intense for the business within an industry sector that includes many smaller and midsized institutions that make extensive use of information services. Many of the larger vendors provide a variety of services so that they can support clients of any size, or provide a full range of applications support so they can support all the needs of any given client.

C
Competitive Positioning

The combined result of stagnant IS budgets, a sluggish economy, and user interest in new technologies has increased the level of competition for IS firms that service the top banks and financial institutions. This heightened competition has prompted IS firms to explore the viability of company alliances and acquisitions. For example, First Financial Management Corporation (FFMC) has effectively used the growth by acquisition strategy. During the past 20 years, FFMC has acquired and integrated over 70 companies; nine of these acquisitions were consummated in 1991.

Industry activity includes:

- American Management Systems generated $57.1 million in revenue during 1992 by targeting primarily the largest commercial banks and the big nonbank financial services firms. Less than 20% of its revenue comes from the sale of software products such as those for credit processing. The majority of its revenue is generated from professional services business derived from support of the software packages, modification of the packages, or custom software development. Competition primarily consists of the big CPA firms and leading banking and finance industry vendors.

- Broadway & Seymour provides large-bank customers with custom systems development and maintenance. For small banks, B&S offers turnkey hardware and software systems based on IBM's AS/400 minicomputer systems.

- Hogan Systems provides software products (software systems for loans, deposits, customer information, and risk analysis) for large commercial banks and professional services that support the software. Hogan emphasizes that it offers the most flexible products in its class.

- M&I Data Services, Inc., a subsidiary of Marshall & Ilsely Corporation, provides processing services, systems operations services, and applications software products to banks and thrifts. M&I's noncaptive revenue increased to $113 million in 1992 from $92.6 million in 1991.

- Systematics, a subsidiary of ALLTEL Corporation, serves the entire banking and finance industry, primarily with systems operations services, software products and development/maintenance services, viewing EDS as a major competitor. Systematics generated revenue of $579 million in 1992 (this includes the operations of the newly acquired Computer Power, Inc.). Approximately 85% of Systematics' annual revenue was derived from the banking and finance industry. The assets of Systematics' financial clients range from $18 million to $139 billion in the U.S.

With reduced growth projected for the banking and finance sector, some vendors are looking for other industries in which to apply their skills. One such crossover is from banking to health care information services.

There are many similarities between the banking and finance sector and the medical sector. At an industry level, banking and health services share the following characteristics:

- Labor-intensive service industries

- Heavily regulated by multiple authorities

- Broad public-service responsibilities
- Deal with large, diverse retail customer base
- Ongoing client relationship with multiple parts of the institution (multiple accounts in a bank; multiple departments in a hospital)

At a firm level, large financial firms such as Citicorp and Merrill Lynch, and large institutions such as Stanford University Hospital and the Kaiser HMO, are all:

- Large, complex matrix organizations
- Critical "infrastructure institutions" within our society

From a technology standpoint, all of these organizations:

- Have large, complex data bases
- Operate widely distributed, mission-critical, process control applications (ATMs, electronic funds transfer systems; patient monitoring, laboratory automation)
- Operate a parallel set of critical human input/output applications (teller, platform and back-office operations; admissions, patient records, billing)
- Have critical requirements for quality/reliability/accuracy of systems and data input, coupled with a critical need for flexible backup/recovery capabilities

In general, the health services industry is where the financial services industry was ten years ago: concluding a stage of rapid growth, coming under increased public scrutiny, and being subjected to increasing regulatory and cost pressures. Most health services executives are still medical professionals, not professional managers, and many of these individuals are beginning to realize they could use more professional assistance.

Exhibit V-2 presents a list of leaders within the banking and finance industry and their corresponding 1992 estimated market share.

EXHIBIT V-2

Banking and Finance

IS Market Share

Company	Market Share (Percent)
EDS	7
First Financial Management Co.	6
Dow Jones	4
Andersen Consulting	4
Systematics	4
First Data Resources	3
IBM	3
Fiserv	2
Mellon Information Services	2
M&I	1

D
Leading Vendor Profiles

1. Dow Jones Telerate

Harborside Financial Center
600 Plaza Two
Jersey City, NJ 07311
(201) 938-4000
President: Carl M. Calenti
Parent: Dow Jones & Company
Total Employees: 2,800
Total Revenue: $621,600,000
FYE: 12/31

a. Background

Dow Jones Telerate has been a subsidiary of Dow Jones & Company since 1990. However, between 1987 and 1990, Dow Jones & Co. held a majority interest in Telerate, and invested approximately $911 million in its future subsidiary. Currently, Telerate, is part of Dow Jones' information services segment; other business segments of Dow Jones' information services include Dow Jones News Services and Dow Jones News/Retrieval.

Revenue generation during 1992 was as follows:

- Dow Jones & Company—$1.8 billion
- Dow Jones Information Services Unit—$809 million
- Telerate—$622 million

Dow Jones Telerate specializes in the delivery of on-line financial data, decision support products, and transaction services to financial markets where decision making requires time-critical data. Clients include banks and other financial institutions, government agencies, brokers, and private investors.

b. Strategy

Telerate continues to heavily promote its PC-based products. The number of customers using Matrix, Telerate's flagship product, increased approximately 70% during 1992. Users of the TeleTrac analysis package and Tactician analysis package for U.S. Treasury securities increased 21% and 31%, respectively.

Telerate has focused on boosting its international sales. During 1992, international revenue increased 12.8%, while U.S. sales remained stable as securities firms, banks, and savings and loan institutions began to recover from the recession.

In a continuing effort to further penetrate international markets, Telerate increased its equity position in Minex Corp. to 7% during 1992. Minex is a Tokyo-based consortium that was established in 1991 to serve the global market for foreign exchange transaction services. In April 1993, Minex launched a worldwide automated foreign exchange matching service for spot foreign exchange trading. Telerate is the exclusive marketer and distributor of the Minex service outside of Japan.

Additionally, in 1992, Telerate acquired Valgest, a provider of software that is used to analyze the French bond markets. Telerate's strategy is to leverage this product base and expand its distribution throughout Europe.

c. Key Points

- Dow Jones Telerate's strength is in collecting rates and quotes on financial instruments for which there is no central market, such as the market the New York Stock Exchange provides for equities.
- Since the 1970s, Dow Jones Telerate's market coverage and product line have expanded from fixed income to foreign exchange, equities, commodities, and transaction-based services.
- The overseas market continues to offer ample opportunity for expansion. Revenue from outside North America amounted to $370 million, a 12.8% increase from 1991 to 1992.
- Telerate's major competition comes from Reuters Limited.

2. Electronic Data Systems Corporation

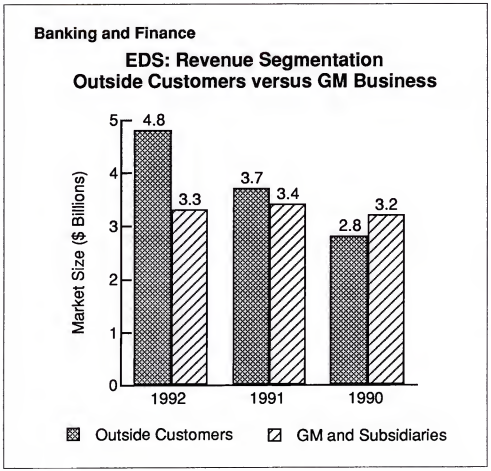
7171 Forest Lane
Dallas, TX 75230
(214) 604-6000
Chairman, President, CEO: Lester M. Alberthal, Jr.
Parent: General Motors Corporation
Total Employees: 71,000 (12/92)
Total Revenue: $8,218,900,000
FYE: 12/31

a. Background

Electronic Data Systems Corporation (EDS), founded in 1962, is a world leader in the application of information technology (IT), providing information processing, systems management, systems integration, systems development, consulting, software products, and process management services to customers worldwide. In addition to companies in the banking and finance industry, EDS serves public and private organizations in communications, energy, government, health care, insurance, manufacturing, retail, and transportation.

EDS was acquired by General Motors Corporation (GM) in October 1984, and operates as an independent subsidiary. EDS' largest client is GM and its subsidiaries. During 1992, EDS generated $8.1 billion in revenue, which was an increase of 16% over 1991 revenue of $7.1 billion. Revenue from business that stemmed from GM amounted to $3.3 billion, and outside customers represented $4.8 billion in revenue (see Exhibit V-3). Approximately 77% of EDS's total 1992 revenue was generated within the U.S.; the remaining 23% came from international markets.

EXHIBIT V-3



b. Strategy

EDS extensively uses relationships with other companies in an effort to develop appropriate solutions for its banking and finance clients. Worldwide, EDS has ongoing relationships with more than 5,000 vendors; a sampling of current joint ventures, joint developments, and other alliances is shown in Exhibit V-4

EXHIBIT V-4

Banking and Finance

Partial Listing of Company Relationships

Joint Ventures	Joint Development
• 3Com • CAMI Automotive • Emperion • Lucky-Goldstar • Sony • Apple Computer • China Management System • Hitachi Data Systems Holding Corp • Orion • STM (Korea) • Beijing Municipal Government • Compaq • Hughes Aircraft • Pritzker • Telefonica	• AT&T • CADAM • France Telecom • IBM • Sun Microsystems
	Alliances
	• CGI Systems • Hewlett-Packard • Interpractice Systems • Intergraph

EDS offers financial institutions technology-based solutions through systems integration, facilities management (systems operations), and service bureau operations. The company's products and services include data processing, communications, information management, back-office, bank card, and payment services. The company currently services more than 5,000 banks, credit unions, and savings institutions worldwide.

c. Key Points

- Major competitors of EDS within the banking and finance industry by product/service area include the following:
  - Credit unions: Ceridian and FIserv
  - Remote computing services: Boeing Computer Services, Martin Marietta, CSC, and GE Information Services
  - Systems Integration: Andersen Consulting, Scientific Applications International, BDM International, Unisys, and IBM
  - Systems operations/facilities management: Andersen Consulting, CSC, IBM, ISSC, and CAP Gemini
- During 1992, EDS signed 848 contracts with new and existing financial services customers. EDS has also made two acquisitions in the financial services consulting area.
- EDS and CLS Corp., the nation's largest independent consumer loan servicer, have entered into an equity agreement whereby EDS and CLS will jointly market loan services—including application processing, credit approval decision making, payment processing, collection support, and customer service functions—to financial services providers.
- Presently, EDS processes information for more than 12 million credit union members and more than 2,300 credit unions.

3. First Financial Management Corporation

3 Corporate Square
Suite 700
Atlanta, GA 30329
(404)321-0120
Chairman, President, and CEO: Patrick H. Thomas
Total Employees: 11,500 (3/93)
Total Revenue: $1,404,710,000
FYE: 12/31

a. Background

First Financial Management Corporation (FFMC), founded in 1971, provides a range of processing services. Currently, information services are provided to over 220,000 customers through a distributed network of 410,000 on-line devices and 180 business units throughout the U.S., and the Caribbean.

FFMC provides the following processing services:

- Accounts receivable management
- Check processing, settlement, guarantee, and verification
- Debt collection
- Merchant credit card authorization

As of December 31, 1992, FFMC had 12,600 employees.

b. Strategy

FFMC utilizes corporate acquisition as a strategy to expand both operations and market share. During the past 20 years, FFMC has acquired and integrated over 70 companies; nine of these acquisitions were completed in 1991. Exhibit V-5 shows FFMC's acquisition and divestiture activity during 1992 and 1993.

EXHIBIT V-5

Banking and Finance

FFMC: 1992 & 1993 Acquisition and Divestiture Activity

Year	Company/Business Unit	Acquisitions
1992	• SUMMIT • American Data Systems	Acquired SUMMIT Information Systems and American Data Services (two financial services processing firms), which were merged into the Basis Information Technologies Unit.
1992	• National Westminster Bank • Barclays Bank	Purchased National Westminster Bank's merchant portfolio, and also purchased a merchant portfolio from Barclays Bank; both were converted into NaBANCO.
1992	TeleCheck	Purchased TeleCheck Services, Inc. from McDonnell Douglas Corp., and purchased TeleCheck's principal franchisee, Payment Services Company. The combined purchase price amounted to $156.1 million in cash and stock. TeleCheck and Payment Services generated revenue in 1991 of $105 million.
1992	COIN Banking	Acquired COIN Banking Systems, Inc, which generated $4 million in revenue during . COIN Banking provides PC/LAN-based applications software to the financial industry for consumer and commercial lending, bank card operations, and retail credit approval.
1992	ALTA	Acquired ALTA Health Strategies for $112.5 million in cash and stock. ALTA generated $142 million in revenue during 1992 and is one of the nation's largest processors of private sector health care claims.
Year	**Company/Business Unit**	**Divestitures**
1993	Basis Information Technologies	Sold Basis Information Technologies (1992 revenue of $113.8 million) to Fiserv for $96.5 million in cash and Fiserv stock.
1992	First Family Financial Services	Completed the sale of First Family Financial Services (a wholly owned consumer finance subsidiary of Georgia Federal Bank) to Associates Corporation of North America (a unit of Ford Motor Company) for $248 million.
1992	Georgia Federal Bank	Sold Georgia Federal Bank to First Union Corporation for $269 million.

FFMC approaches the processing services marketplace through three distinct business operations: Data Imaging Services; Healthcare Services, and Merchant Services.

The Merchant Services unit caters specifically to the banking and finance industry. With over 3,600 employees, this unit provides information services through NaBANCO (merchant credit card processing); TeleCheck (check guarantee and verification services), Nationwide Credit (debt collection and accounts receivable management services), and MicroBilt (data communications and information processing systems). Merchant Services supports over 205,000 customers through 46 locations and had revenue of $841 million in 1992.

In an effort to remain competitive, FFMC continues to provide new information services to the banking and finance industry. During 1992, the company added the following new services:

- The SurePay credit card system provides chargebackless processing to the merchant. The SurePay Terminal and Printer accesses the NaBANCO operating system directly and eliminates procedural chargebacks. The system features electronic signature capture and both magnetic strip and embossed number-reading capabilities.

- NaBANCO is now using the extensive check verification data base of TeleCheck to promote Chek*It, NaBANCO's check verification product.

- NaBANCO is providing a PC-based electronic tracking and filing system, Trac*It, for retrieval and chargeback requests for on-site client use.

c. Key Points

FFMC's competitors generally vary by geographic area. Major competitors to FFMC by product/service area include:

- Data imaging services: Anacomp

- Credit card services: National Processing Co., CES, and National Data Corporation

- Check verification: National Data Corporation and Telecredit

FFMC supplies services to the banking and finance industry through its merchant services, which include services provided by NaBANCO, TeleCheck, and Nationwide Credit.

Through its NaBANCO wholly owned subsidiary, FFMC operates the nation's largest full-service third-party provider of merchant credit card authorization, processing, and settlement services. Services are provided to over 129,000 merchant customers at over 200,000 locations throughout the U.S., the Caribbean, and Canada. In 1992, NaBANCO processed over $42 billion in total merchant credit card transactions, an increase from $33 billion in 1991.

Nationwide Credit provides a range of customer debt collection and accounts receivable management services to financial institutions, retailers, government agencies, and health care providers.

The newly acquired TeleCheck is one of the world's largest check acceptance companies, with nearly 30 years of experience. During 1992, TeleCheck served approximately 100,000 retailers and financial institutions worldwide. It handled over $15 billion in check approvals, an increase over the 1991 figure of $9.2 billion.

4. FIserv, Inc.

255 FIserv Drive
Brookfield, WI 53045
(414) 879-5000
Chairman, CEO: George D. Dalton
President, COO: Leslie M. Muma
Total Revenue: $332,090,000
Employees: 5,100

a. Background

FIserv, Inc., formed in 1984, provides on-line processing services to thrifts (savings and loans and savings banks), commercial banks, credit unions and other financial institutions. The company also provides trust administration services for self-directed retirement plans and microcomputer software and educational services for asset/liability management to financial institutions. With the acquisition of Citicorp Information Resources, Inc. in April 1991, FIserv has expanded its outsourcing capabilities and added applications software products, systems operations services, and professional services consulting for the financial services industry.

b. Strategy

FIserv is striving to become the nation's largest full-service financial processing company through the growth of its existing data centers, and expansion into new (but related) products and services for the financial services industry. FIserv reinvests approximately 10% of its total revenue in product development. An active portion of the company's growth

strategy is expansion into new geographic areas through acquisition. Since the company's foundation in 1984, it has completed over 30 acquisitions. Exhibit V-6 lists the acquisitions pertaining to the years 1991 and 1992.

EXHIBIT V-6

Banking and Finance

FIserv: 1991 and 1992 Acquisition Activity

Acquired Company	Type of Business	Acquired Company	Type of Business
• Bank Group Services	Item processing	• BMS Processing, Inc.	Item processing
• Cadre, Inc.	Disaster recovery services	• Citicorp Information Resources, Inc.	Data processing/ in-house software for banks and credit unions
• BMS On-Line Services (selected assets)	Data processing services	• FHLB of Dallas, IPS Services	Item processing
• Dakota Data Processing	Data processing services	• FHLB of Chicago, IPS Services	Item processing
• Data Holdings, Inc	Automated card service		
• First American Information Services	Data processing/ item processing		
• Performance Analysis	Software for banks		
• Chase Manhattan Bank, REALM Software	Software for banks		

FIserv's service strategy is to offer a wide range of interrelated products and services in an effort to meet the extensive data processing demands of a large customer base. These banking and finance products and services include: ATM and EFT/POS Processing Services; Cards and Card Management Services; Disaster Recovery Services; Facilities Management Services; Forms and Graphics; Communications Design and Production

Services; Item Processing Services; Rate Risk Management Systems and Performance Analysis Services; Resource Management Services; Self-Directed Retirement Plan Processing Services; Service Bureau Systems and Support; and Software Development and Technology Support Services for In-house Systems.

c. Key Points

- FIserv's competition includes EDS, NCR, First Financial Management Corporation, and various regional firms.
- At the end of 1992, FIserv operated 42 full-service data centers, software system development centers, item processing and support centers within the U.S. These centers maintain integrated data processing systems for over 1,500 financial institutions.
- FIserv's total client base includes more than 3,500 financial institutions.
- FIserv serves over 1,100 credit unions.

Conclusions and Recommendations

A
Industry and Information Services Market Conclusions

The banking and finance industry faces a business and social environment of uncertainty and likely change during the 1990s. This will be especially true during the 1993-94 timeframe, as the new administration seeks to legislate a broad range of economic and social reforms intended to restructure the economy and realign national priorities to coincide with the realities of the post-Cold War environment. Though the economy does not seem to be in a serious recession, it does not seem to be in a serious recovery either. Meanwhile, there is a significant lose-lose situation facing the economy in general and banking in particular.

If the Clinton administration is allowed by Congress to proceed with its planned economic reforms, there will be significant disruption in the defense/aerospace sector, which tends to be concentrated in the same regions that hosted the real estate and S&L debacles of the 1980s. No matter what form it takes, health care reform will also prove disruptive to everyone involved, from employers in general to specific groups such as health care providers, insurance firms, pharmaceutical manufacturers and a host of others. On the other hand, a continuation of the status quo will also sap the economy as ever-expanding budget deficits and health care costs consume resources that could be put to more productive use in both the public and private sectors.

Whatever the economic climate, regulations governing the operations and ownership of all financial segments can be expected to change, although the exact nature of changes will be subject to the uncertain interplay of powerful post-election political and economic forces. Despite occasional outbursts from critics, the problem of bank and S&L failures is largely behind us. Some further consolidation of the S&L segment is clearly ahead, and additional mergers and acquisitions can be expected in the commercial bank market. Credit unions can expect to enjoy a relatively unchanged—if unglamorous—future of locally based, nonprofit operation. The bright star, barring unforeseen regulatory changes, will continue to be the competitively aggressive and successful nonbank financial services firms.

In all segments of the industry, the trend toward outsourcing will continue. Some smaller institutions will find cost-saving opportunities in the use of integrated turnkey platforms that can handle the majority of their processing. Overcapacity and mergers will tend to restrain expenditures for processing services, but needs for systems integration, systems operations, and network services will cause these delivery modes to grow at levels better than the overall market rate. Continued budget constraints and the trend toward packaged application solutions will reduce expenditures for generic professional consulting services. However, some of the savings may be redirected toward specialized services such as business re-engineering or merger-related support.

The uncertainty overshadowing this or any other market forecast is the overall economic situation. In the long run, like Merrill-Lynch, INPUT is "bullish" on America. In the short run, however, the situation is much more cloudy. On one hand, most of the pieces necessary for a recovery from the 1990-92 recession appear to have been in place for some time, and the financial services industry has experienced a significant rebound in profits over the last two years. On the other hand, the economic restructuring proposed by the new administration has far-reaching implications for both geographic and industry markets. The short-term paralysis and longer-term dislocations caused by these proposals will have profound effects on financial institutions and their customers.

As a result of these economic and industry factors, the market outlook for information services firms selling into the banking and finance sector is one of only moderate growth during the forecast period. Institutions will continue spending in a relatively conservative manner until the economic and regulatory environment stabilizes, and a clearly recognizable and sustainable recovery occurs. For the most part, financial institutions are unlikely, in this environment, to undertake new investments that do not promise significant short-term payoffs.

B

User Issues and Recommendations

1. Technological Issues

Key technological issues faced by banking and finance industry information services users are outlined below.

Mergers and Acquisitions - For an increasing number of information systems managers, the key technological issue of today is how best to integrate multiple systems and lines of business resulting from mergers or acquisitions. In most merger situations, the acquiring institution is larger than its acquisition, and in many cases has sufficient excess capacity to bring the additional work in-house. At a minimum, post-merger integration involves cross-system communication issues. But more typically, it

calls for the elimination of duplicate applications, subsystems, or entire systems/services complexes in favor of integrated—and more cost-effective—operational environments.

Efficiencies and Downsizing - Even though profits rose in both 1991 and 1992, the key industrywide drive to strengthen capital ratios means that systems budgets will continue to be squeezed. Deadlines and user demands, of course, will not decrease in proportion. Thus, instead of evaluating which major investments to make, most systems managers at S&Ls and commercial banks today are faced with constant pressure to generate more efficient performance from existing systems. This effort can sometimes be coupled with investments in new high-performance technology to allow systems consolidation—say, from multiple data centers to a single, less costly center. In other cases, downsizing and consolidation will be both an objective in and of itself, and the result of rigorous re-engineering of the bank production function, to gain either functional or performance-oriented competitive advantage.

Disaster Recovery - Given the regulatory mandate to plan for disaster recovery, implementing and upgrading these capabilities is a priority for all financial institutions. All institutions should recognize that such resources are only effective if they are fully tested and accommodate the full range of possible disaster scenarios.

Use of Processing Services - Any institution that is considering a switch from in-house support of users to an outside processing service, or from one vendor to another as part of a merger/consolidation effort, must carefully plan for and manage the change. Although processing services vendors offer some transition support, there is often a larger-than-anticipated need for additional consulting services to manage data conversion, develop new procedures, handle training, etc.

Regulation - New regulatory changes are an ongoing fact of life, and many changes with future effective dates are already on the books. Most regulatory changes have significant systems impacts, despite the fact that regulatory agencies often neglect this consideration when establishing their timeframes for implementation. Systems managers must be prepared to handle such disruptions, even in the face of tight or reduced budgets.

RDBMSs - Transition to RDBMS environments is increasingly common, if not yet universal, for commercial banks and S&Ls. Nonbank financial services firms have generally already made the transition. The key technological issue is actually a business issue: understanding the business objectives well enough to implement an RDBMS that will provide real cost-effective support and address real business problems. Most new RDBMS applications involve a mix of mainframe and PC-based resources. One of the challenges is modeling the applications under this distributed systems environment, projecting the likely impacts on existing

systems resources, and defining the hardware changes necessary to maintain satisfactory response and performance levels.

Executive Information Systems - One of the main drivers of an institution's transition to an RDBMS may be senior management's desire or demand for an executive information system (EIS). Back-office operations (and, more recently, platform transactions) have been heavily computerized by most institutions. But few true EIS systems have been developed, and many of these have failed to generate the kind of high-level management information that can be critical in a fast-changing competitive environment. The new RDBMSs will perform a central role in making possible such executive-level systems. But equally critical is the active involvement of top management in the design and implementation of their EIS. Note that, although the costs of information technologies have always been visible to banking management, executive-level systems represent a new level of visibility and involvement where success will be very important to the systems managers. Successful implementation of executive management systems, and careful attention to executive needs, can smooth the way for many future IS activities.

Imaging - Imaging technologies are being studied at one level or another by most financial institutions. Although small departmental "file folder" applications are being implemented by many institutions, the larger, high-volume item processing systems are being implemented by relatively few, due to high startup costs. An important part of the cost and complexities of implementing imaging is determining how it will impact and integrate with other systems. In general, the free-form nature of electronic images is in marked contrast to the highly formatted numeric content of most of today's banking information systems.

Workstations - Outside of brokerages, the future role of fast-evolving workstation technology in the banking and finance sector remains uncertain. Raw costs and price/performance ratios are moving fast in the directions that users favor, yet the investment to use this technology is still sizable. Managers must decide which applications, old or new, will justify such investments, and what systems integration issues must be faced.

CASE - Most commercial banks, S&Ls, and credit unions prefer standardized application solutions (processing services, turnkey systems or packaged software) to in-house application development for their core systems. Many institutions with significant software development shops, however, are now evaluating whether to initiate CASE. One stumbling block in today's business environment is the general agreement that, in addition to sizable dollar investments for the required systems environment, the cultural and mind-set changes required by CASE generally *reduce* productivity in the short run, and may require splitting applications development staff into separate CASE-based and traditional systems groups. On cost and productivity counts, therefore, CASE investment likely will be postponed by many.

Keeping Pace With Technology - The fact that the banking and finance sector is reducing the growth of its systems expenditures has not, of course, slackened the pace of technological change. Progressive systems managers need to find ways to make the key systems investments required to retain valuable staff if other industries offer better opportunities to use the latest technologies. For example, some investment of time and resources should be made to determine which technologies ought to be implemented on at least a trial basis. Careful trials can lead to selective implementation of cost-justified new technologies, allowing the institution to maintain a progressive posture with its staff and customers and giving it the flexibility to move more aggressively into additional technologies as required.

2. Business Issues

Key business issues that information services users face in the banking and finance industry are summarized below.

Priorities and Resource Allocation - Perhaps the toughest business issue facing today's banking and finance industry systems manager is coping with backlogged, continuing, and new user needs in an environment of strict cost controls. An especially thorny issue for many is the additional task—on top of normal responsibilities and priorities—of integrating the systems of one or more merged institutions. At some level, a *triage* mentality may be required, with clear communication to business management that certain current or proposed projects or investments simply must be delayed or cut from the plan in order to make reasonable progress on other higher priority or less costly ones. Another key aspect of this *triage* process is trimming the surviving projects to the bone: focusing on swift implementation of required core capabilities and deferring "nice to have" features to a later date.

Cost Efficiencies - Pressures will continue to increase the savings from existing systems. Although some very large institutions are successfully downsizing multiple data centers, a much larger number of midsized institutions with only one facility are considering the cash and/or capital savings implications of switching to a processing service or third-party systems operator. At the same time, users of processing services are also looking with interest at the ever-improving price/performance ratios for minicomputer-based turnkey systems. Similarly, software development departments with reduced or frozen staff levels are evaluating the latest software packages to determine their cost and capabilities versus in-house development.

As usual in times of budgetary restraint in any industry, users of professional services must evaluate whether such spending is actually discretionary—or at least of relatively lower value than preserving in-house staff or funding alternate investments. One exception, of course, is consulting,

which is directly related to cost-cutting or efficiency improvements. Another is the conscious replacement of permanent in-house staff with project-oriented consultants—a strategy which is consistent with the shift away from customized in-house systems toward more standardized, vendor-provided application solutions.

3. Recommendations

Recommendations for users that derive from the issues outlined in this section are presented in Exhibit VI-1.

EXHIBIT VI-1

Banking and Finance

User Recommendations

- In all planning, consider the institution's competitive positioning as better times return.
- Deal with uncertainty by planning multiple scenarios, especially those keyed to changes in financial condition, the regulatory environment, merger/acquisition situations, and the evolution of technology.
- Adopt a thorough and professional approach toward financial management.
- Review and strengthen justifications for high-priority systems budget items.
- Anticipate a continuation of budgetary restraints and evaluate trade-off opportunities within the systems budget.
- Require demonstrated value for each professional services dollar.
- Adopt a flexible, multifaceted approach toward outsourcing options.
- If operating in-house, consider a processing service and/or outside systems operations to determine if cost-efficiency savings are feasible.
- Evaluate the cost effectiveness of available software packages versus in-house development.
- If your institution is of medium size or smaller, consider the benefits of the latest generation of minicomputer-based turnkey systems.
- Place a high priority on managing human and technology investments.
- Retain valuable staff. One way to do this is to make at least some investment in new technologies.
- If your institution has distributed resources, consider downsizing or merging multiple data centers.
- Fully understand and balance your business needs and technology strategies before choosing an RDBMS; don't choose a dead-end alternative.
- Carefully evaluate costs and benefits before undertaking imaging. Try a low-cost pilot and consider delaying implementation until costs drop or competitive pressures increase.

C
Information Services Vendor Issues and Recommendations

Recommendations for information services vendors generally parallel those for users, as they derive from the same set of issues. These recommendations are presented in Exhibit VI-2.

EXHIBIT VI-2

Banking and Finance

Vendor Recommendations

- Focus on the strategic position of your client.
- Look at interim business planning and consider creating scenarios to account for changes in regulations and user financial condition.
- Place more emphasis on selling to financially and competitively strong nonbank financial services firms.
- Consider each existing user's likely merger opportunities and the impacts, both positive and negative, on the vendor's systems or services.
- Identify and promote the benefits of investing now to achieve competitive advantages as banking industry conditions continue to improve.
- Help your clients cost-justify your services.
- Develop sales approaches that recognize that cash and capital are especially tight for most institutions in the banking and finance sector.
- Processing services vendors or outside systems operators should use this opportunity to press the case for preserving cash and/or capital.
- Proactively defend budget line items with user management.
- Help IS managers develop new and stronger cost justifications that they can present to their management.
- Turnkey systems vendors should actively sell advantages in cost effectiveness.
- Vendors of software packages should ask those who have declined such resources in the past to reconsider, given the cost effectiveness of outside rather than internal development under current economic conditions.
- Professional services firms must be prepared to offer well documented and tougher cost justifications of the value they deliver and the services they provide.
- Help your clients manage their investment in technology and infrastructure.
- Professional services firms or systems operators should look for opportunities to help larger institutions downsize or merge multiple data centers or other redundant resources.
- New-technology vendors must emphasize the importance of a continuing investment in order to retain valuable staff members.
- RDBMS vendors should work with the client to understand all current and future business needs and thus present the strongest case for their product.
- Imaging vendors should consider offering low-cost "get-acquainted" pilots.

Blank

Forecast Data Base

This appendix contains the forecast data base for the period 1993-1998 and the 1993 MAP data base reconciliation.

A

Forecast Data Base

Exhibit A-1 presents the detailed 1992 actual and 1993-1998 forecast for the banking and finance sector.

EXHIBIT A-1

Banking and Finance

User Expenditure Forecast by Delivery Mode, 1992-1998
($ Millions)

Delivery Mode	1992 ($M)	Growth 92-93 (%)	1993 ($M)	1994 ($M)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	CAGR 93-98 (%)
Sector Total	13,092	11	14,550	16,211	18,137	20,341	22,825	25,598	12
Professional Services	2,379	13	2,682	2,910	3,125	3,355	3,616	3,900	8
- IS Consulting	585	14	668	735	810	890	978	1,075	10
- Education & Training	326	13	370	410	445	483	523	570	9
- Software Development	1,468	12	1,644	1,760	1,870	1,990	2,115	2,255	7
Systems Integration	521	12	586	700	860	1,047	1,262	1,523	21
- Equipment	173	11	192	230	278	334	398	478	20
- Software Products	35	14	40	51	64	78	92	107	22
· Applications Software	23	13	26	32	40	49	59	70	22
· Systems Software	12	17	14	19	24	29	33	37	21
- Professional Services	287	13	325	395	481	585	711	865	22
- Other	26	12	29	34	41	50	61	73	20
Systems Operations	2,470	13	2,786	3,258	3,852	4,562	5,394	6,393	18
- Platform Operations	645	11	715	798	890	993	1,109	1,237	12
- Applications Operations	1,275	12	1,425	1,655	1,958	2,310	2,715	3,191	17
- Desktop Services	303	14	345	415	495	598	710	850	20
- Network Management	247	22	301	390	509	661	860	1,115	30
Processing Services	3,798	9	4,125	4,495	4,920	5,405	5,910	6,400	9
- Transaction Processing	3,798	9	4,125	4,495	4,920	5,405	5,910	6,400	9
Network Services	798	12	892	1,008	1,164	1,358	1,592	1,859	16
- Electronic Info. Svcs.	702	12	785	885	1,022	1,193	1,402	1,640	16
- Network Applications	96	11	107	123	142	165	190	219	15
Applications Software Products	2,122	11	2,366	2,611	2,871	3,139	3,425	3,744	10
- Mainframe	935	11	1,042	1,150	1,260	1,360	1,460	1,563	8
- Minicomputer	675	11	752	825	902	987	1,082	1,186	10
- Workstation/PC	512	12	572	636	709	792	883	995	12
Turnkey Systems	1,004	11	1,113	1,229	1,345	1,475	1,626	1,779	10
- Equipment	448	6	475	510	545	580	625	665	7
- Software Products	381	14	433	485	535	600	666	739	11
· Applications Software	330	15	378	425	470	530	590	657	12
· Systems Software	51	8	55	60	65	70	76	82	8
- Professional Services	175	17	205	234	265	295	335	375	13

B

Forecast Reconciliation

Exhibit A-2 offers a reconciliation of the 1992 and 1993 forecasts for the banking and finance sector.

EXHIBIT A-2

Banking and Finance

1993 MAP Data Base Reconciliation ($ Millions)

Delivery Mode	1992 Market				1997 Market				92-97 CAGR per data '92 Rpt (%)	92-97 CAGR per data '93 Rpt (%)
	1992 Report (Fcst) ($M)	1993 Report (Actual) ($M)	Variance from 1992 Report ($M)	Variance from 1992 Report (%)	1992 Report (Fcst) ($M)	1993 Report (Fcst) ($M)	Variance from 1992 Report ($M)	Variance from 1992 Report (%)		
Total Sector	13,015	13,092	77	1	22,303	22,825	522	2	11	12
Professional Services	2,380	2,379	-1	0	3,441	3,616	175	5	8	9
Systems Integration	520	521	1	0	1,337	1,262	-75	-6	21	19
Systems Operations	2,470	2,470	0	0	5,128	5,394	266	5	16	17
Processing Services	3,725	3,798	73	2	5,756	5,910	154	3	9	9
Network Services	790	798	8	1	1,626	1,592	-34	-2	16	15
Applications Software Products	2,120	2,122	2	0	3,416	3,425	9	0	10	10
Turnkey Systems	1,010	1,004	-6	-1	1,599	1,626	27	2	10	10

There were only minor differences between the 1992 projection for 1992 expenditures and the actual amounts noted in the 1993 report. The maximum variance was a 2% 1992 understatement of 1992 processing services revenues, resulting from the continued strong use of this incrementally costed service during 1992's unsettled economic climate.

Variances in the market projections for 1997 ran from -6% to 5% for six of the seven delivery modes, averaging a 2% overall increase in 1997 expenditures, and reflect minor adjustments in the 1997 forecasts for most delivery modes.

Small variations in the 1992-1997 compound annual growth rates (CAGRs) include a 1% overall increase for the total market sector, and 1% increases in both systems operations and professional services growth rates. The growth rates for systems integration and network services were decreased by 2% and 1% respectively—the result of a slower-than-anticipated economic recovery, which has constrained expenditures in these areas.

INPUT®

INTERNATIONAL IT INTELLIGENCE SERVICES

Clients make informed decisions more quickly and economically by using INPUT's services. Since 1974, information technology (IT) users and vendors throughout the world have relied on INPUT for data, research, objective analysis and insightful opinions to prepare their plans, market assessments and business directions, particularly in computer software and services.

Contact us today to learn how your company can use INPUT's knowledge and experience to grow and profit in the revolutionary IT world of the 1990s.

SUBSCRIPTION SERVICES

- **Information Services Markets**
  - Worldwide and country data
  - Vertical industry analysis
- **Systems Integration and Business Process Change**
- **Client/Server Applications and Directions**
- **IT Outsourcing Opportunities**
- **Information Services Vendor Profiles and Analysis**
- **EDI/Electronic Commerce**
- **U.S. Federal Government IT Markets**
- **IT Customer Services Directions**
- **Interactive Communications Services**
- **Multimedia Opportunities**

SERVICE FEATURES

Research-based reports on trends, etc. (Over 100 in-depth reports a year)

Frequent bulletins on events, issues, etc.

5-year market forecasts

Competitive analysis

Access to experienced consultants

Immediate answers to questions

DATA BASES

- **Software and Services Market Forecasts**
- **Software and Services Vendors**
- **U.S. Federal Government**
  - Procurement Plans (PAR)
  - Forecasts
  - Awards (FAIT)
- **Commercial Application LEADS**

CUSTOM PROJECTS

For Vendors—analyze:

- **Market strategies**
- **Product/service opportunities**
- **Customer satisfaction levels**
- **Competitive position**
- **Acquisition targets**

For Buyers—evaluate:

- **Specific vendors**
- **Outsourcing options**
- **Market opportunities**
- **Systems plans**
- **Peer position**

OTHER SERVICES

Presentations to user groups, planning meetings, etc.

Acquisition/partnership searches

Newsletters

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